PPG Amercoat

Pitt-Char XP®

Epoxy Intumescent Coating

Product Data/ Application Instructions

- **Superior fire & corrosion protection**
- **Unique flexibility**
- **Superior mechanical resistance**
- **Suitable for cryogenic exposure**
- **Complies with international fire standards**

Typical uses

Pitt-Char XP epoxy intumescent coating offers outstanding fire protective properties. When exposed to fire, its unique chemical composition transforms its surface into ceramic-like, insulating char that provides thermal protection for the substrate even under hydrocarbon and jet fire conditions.
Because Pitt-Char is an epoxy, its tough, durable coating provides a dense shield to the elements. Pitt-Char XP has resistance to solvents, acids, alkalies, salts and abrasion making Pitt-Char the idea choice for harsh environments ranging from arctic to tropical climates. For service applications exceeding 80°C (176°F) consult your PPG Protective & Marine Coatings representative. Pitt-Char coatings have successfully protected substrates in refineries, chemical plants, offshore platforms, and a variety of other 'high risk' industrial facilities all over the world.

Product fire test results

Pitt-Char coatings have been fire tested at more than 12 fire testing facilities around the world. Our products have received approvals and certificates from Underwriters' Laboratories Inc. (USA and Canada), Det Norske Veritas (Norway), Lloyd's Registry (UK), GASAFE (France), and from several customers based on their own in-house fire testing. Testing has covered a range of heat fluxes including jet fire inpingement testing on various steel section geometries and sizes. A sampling of fire test results are listed. For additional test information, including actual explosion testing up to 1.8 bar average over pressures and 3.0 peak over pressure, consult your local PPG Protective & Marine Coatings representative.

Physical data

Finish	glossy	
Colour	grey	
Components	2	
Mixing ratio		
By volume	2.33 part A to 1 part B	
By weight	3.25 part A to 1 part B	
Curing mechanism	Chemical reaction between components	
Weight solids	100%	
VOC*		
EC SED 1999/13/EC	0 g/kg (0 g/l)	
UK PG6/23(92) Appendix 3	0 g/l (0 lbs/gal)	
Dry film thickness	Dependant on fire rating and loading factors	
Wet film thickness per coat	6-8 mm (0.25-0.30")	
Typical coverage		
At 5 mm/0.2"	0.25 m^2/l	10.33 ft^2/gal
At 10 mm/0.4"	0.12 m^2/l	5.17 ft^2/gal
Flashpoints		
Cure	over 100°C (212°F)	
Resin	over 100°C (212°F)	
Thinner Type 47	44°C	111°F
Amercoat 12	24°C	75°F
Amerrcoat 920	24°C	75°F
Thinner	Thinner Type 47	
Roller finish solvent**	Amercoat 920	
Cleaning solvent	Amercoat 12	

* VOC figures are quoted according to both the EC directive 1999/13/EC which are theoretically calculated figures and the UK PG6/23(92) Appendix 3 which are practically determined figures.

** Amercoat 920 can be used to wet rollers required to treat sprayed surfaces. It may not be used to thin material for appliaction improvement.

Revision date: 16-04-2007

Product fire test results

Test design	Test method	Fire rating
Structural steel Range A/V values for I sections and RH sections	NordTest Method NT Fire 021	1 to 4 hours A/V from 25 to 300 m^{-1} Failure temperature 200°C to 700°C
Underdecks H60 H120	IMO RES using exposure model described in ISO 834	 11.0 mm (0.43") 15.0 mm (0.59")
Bulkheads H60 H120 HO-400°C A-60	IMO RES using exposure model described in ISO 834 IMO RES A 0.517(13)	 10.0 mm (0.39") 14.0 mm (0.55") 7.0 mm (0.28") 8.0 mm (0.31")
Surface flammability	ASTM E-84, UL 723 Tunnel Test as part of UL 263	Flame spread=15 Smoke development=70-110
Column test UL Design No. X-623	UL 263 "Fire Tests of Building Construction Materials"	1 hr: 4.8 mm (0.19") 1½ hr: 6.6 mm (0.26") 2 hr: 8.6 mm (0.34") 2½ hr: 10.7 mm (0.42") 3 hr: 13.5 mm (0.53")
Column test UL Design No. XR-612	UL 1709 "Fire Tests of Structural Steel Protection for Resistance to Rapid Temperature Rise Fires"	1 hr: 7.1 mm (0.28") 1½ hr: 10.2 mm (0.40") 2 hr: 13.2 mm (0.52") 2½ hr: 16.0 mm (0.63") 3 hr: 19.1 mm (0.75")
Jet Fire Test	OTI 95-634 "Jet Fire Resistance Test of Passive Fire Protection Materials"	Protection up to 2 hrs. on Division, one hour on Hollow and I-Sections
LPG/LNG Storage Tanks	US – DOT France - GASAFE	Protection up to 4 hours

Physical and mechanical

Properties	Test method	Result typical
Tensile Strength Elongation	ASTM D-638 Type 1 ASTM D-638 Type 1	49.7 kg/cm^2 (707 psi) >10%
Compression Strength Modulus	ASTM D-695	159.2 kg/cm^2(2264 psi) 327.6 kg/cm^2(4660 psi)
Impact Strength	ASTM D-256 "A"	0.079 kg.m/cm 1.46 ft.lbs./in.
Bond Strength	ASTM D-1002 (modified 0.5 in/min) Tensile Lab Shear	73.9 kg/cm^2(1051 psi)
Hardness* (determined by PPG)	ASTM 2240 Shore D	25 after 24 hrs at 20°C
Density	Practical density after spraying	1100 kg/m^3 (68.7 lbs/ft^3)
Thermal Conductivity	ASTM C-177 K. Value	0.244 W/m.°C.hr (1.69 BTU In./°F,ft^2hr)

Environmental properties

Test conducted by Underwriters laboratories Inc. (UL) to ensure retention of fire protection (UL 263 and UL 1709 test criteria)

Pitt-Char XP Coating passed the following tests

- Salt spray
- High humidity
- Solvent spray
- Acid spray
- Industrial atmosphere (CO_2-SO_2 air mixture)
- Combination dry, wet and freezing cycling
- Heat aging – 80°C for 175 days
- Norsok M501: passed accelerated aging and hydrocarbon fire test portion of M501

Application Data

Substrate ..... Suitably primed steel coated with Amercoat 71, Amercoat 385PA, Amerlock or Amercoat 68 Series.

Surface preparation..... Primed surface must be clean, dry, undamaged and free of all contaminants including salt deposits. Round of all rough welds and remove weld spatter

Application method* ..... Plural component hot spray or mastic airless spray

Environmental conditions

Air temperature.....	10-50 °C	50-122 °F
Surface temperature.....	10-60 °C	50-140 °F

Surface temperature must be at least 3°C / 5°F above the dew point to prevent moisture condensation on the surface.

Pot life**..... 40 minutes at 25°C (77°F)

Curing times*** (°C/°F)	38/100	24/75	16/60	4/40
Cured to Shore A50.....	4 hr	10 hr	36 hr	72 hr

* Pitt-Char XP is available in two package sizes, check with your PPG Protective & Marine Coatings representative for specific recommendations

** Pot life is not a factor when using specialized plural component airless spray equipment

*** Curing times are dependent on temperature, ventilation and exposure to direct sunlight

Surface Preparation
PRIMED STEEL - Coating performance is proportional to the degree of surface preparation. Refer to specifications of the specific primer being used. Prior to coating, primed surface must be clean, dry, undamaged and free of all contaminants including salt deposits. Round of all rough welds and remove weld spatter.

Application Equipment
For optimal efficiency Pitt-Char XP is applied using plural component, hot-spray airless equipment. Separate components are typically heated to 50-60°C (120-140°F) and mixed through a mixing block 3-5 meters (10-15 feet) from the spray gun.
Complete airless spray equipment dimensions and capacities, plus minimum air and power requirements are available in our detailed contractor manual.

Application Procedure
The application of the Pitt-Char XP system requires detailed knowledge of application equipment, components, conditions, configuration and finishing process. Check with your PPG Protective & Marine Coatings representative for information on our contractor training program.

Shipping Data

Packaging

Plural spray kit
Component A (97-194) ..... 2 cans with 26.75 kg (58.9 lbs)
Component B (97-195) ..... 16.5 kg (36.3 lbs) in 5 gallon can

Mastic spray kit
Component A (97-194M) ..... 1 cans with 20.2 kg (44.5 lbs)
Component B (97-195M) ..... 6.2 kg (13.7 lbs) in 2 gallon can

Shipping weight		kg	lb
Plural spray kit			
Component A (97-194)	approx	30	65
Component B (97-195)	approx	19	40
Mastic spray kit			
Component A (97-194M)	approx	22	48
Component B (97-195M)	approx	8	18

Shelf life from shipment date when stored indoors in unopened, original containers at 5 to 40°C (41 to 104°F)
Component A..... 1.5 year
Component B..... 2 years

Pitt-Char FM™ Fabric Mesh

Mesh Code	Description	Roll Size	Uses
238-2/66	Fiberglass, 1/8 x 1/8" holes, 4.5 oz/yd^2	4 x 150 ft (1.2 x 45.7 m) rolls, 600 ft^2 (55.7 m^2) area per roll	Cellulosic and hydrocarbon fires, Structural steel (small sizes)
238-4/66	Fiberglass, ¼ x ¼" holes, 4.5 oz/yd^2	4 x 150 ft (1.2 x 45.7 m) rolls, 600 ft^2 (55.7 m^2) area per roll	Hydrocarbon and 30 min. or less Jet fire. All large steel types.
238-5/66	Pitt-Char FM fabric mesh 6.0 oz/yd^2 (203.4 g/m^2)	40' x 166 ft. (1 x 50 m) roll 533 ft^2 (50 m^2) area per roll	Hydrocarbon and Jet fire areas. All steel types.

Safety
Since improper use and handling can be hazardous to health and cause of fire or explosion, safety precautions included with Product Data/Application Instruction and Material Safety Data Sheet must be observed during all storage, handling, use and drying periods.

Warranty
PPG warrants its products to be free from defects in material and workmanship. PPG's sole obligations and Buyer's exclusive remedy in connection with the products shall be limited, at PPG's option, to either replacement of products not conforming this warranty or credit to Buyer's account in the invoiced amount of the non-conforming products. Any claim under this warranty must be made by Buyer to PPG in writing within five (5) days of Buyer's discovery of the claimed defect, but in no event later than the expiration of the applicable shelf life, or one year from the delivery date, whichever is earlier. Buyer's failure to notify PPG of such non-conformance as required herein shall bar Buyer from recovery under this warranty.

PPG makes no other warranties concerning the product. No other warranties, whether express, implied or statutory, such as warranties of merchantability or fitness particular purpose, shall apply. In no event shall PPG be liable for consequential or incidental damages.

Any recommendations or suggestion relating to the use of the products made by PPG, whether in its technical literature, or response to specific enquiry, or otherwise, is based on data believed to be reliable; however, the products and information are intended for use by Buyer's having requisite skill and know-how in the industry, and therefore it is Buyer to satisfy itself of the suitability of the products for its own particular use and it shall be deemed that Buyer has done so, as its sole discretion and risk. Variation in environment, changes in procedures of use, or extrapolation of data may cause unsatisfactory results.

Limitation of Liability
PPG's liability on any claim of any kind, including claims based upon PPG's negligence or strict liability, for any loss or damage arising out of, connected with, or resulting from the use of the products, shall in no case exceed the purchase price allocable to the products or part thereof which give rise to the claim. In no event shall PPG be liable for consequential or incidental damages.

Due to PPG's policy of continuous product improvement, the information contained in this Product Data/Application Instructions sheet is subject to change without notice. It is the Buyer's responsibility to check that this issue is current prior to using the product. For the most up-to-date Product Data/Application Instructions always refer to the PPG Protective & Marine Coatings website at www.ppgpmc.com.

To avoid any confusion that may arise through translation into other languages, the English version of the Product Data/Application Instructions will be the governing literature and must be referred to in case of deviations with product literature in other languages.

Condition of Sale
All our transactions are subject to our Terms and Conditions of Sale.