

PPG HI-TEMP™ 1027

DESCRIPTION

One-component, high-build heat-resistant inert multipolymeric matrix / inorganic ceramic coating

PRINCIPAL CHARACTERISTICS

- Designed to prevent corrosion under insulation (CUI) of carbon steel and stainless steel
- Prevent external stress corrosion cracking (ESCC) of austenitic and duplex stainless steel
- Resistant to thermal shock/cycling and intermittent immersion and boiling water
- Continuous temperature resistance to 650°C (1200°F) and intermittent temperature resistance to 760°C (1400°F)
- Cyclic temperature resistance from -196°C (-320°F) to 540°C (1000°F)
- Surface tolerant and stable against UV
- May be used as primer for PPG HI-TEMP heat-resistant color topcoats
- Complies with NACE SP0198 for austenitic stainless steels and carbon steels under thermal insulation

COLOR AND GLOSS LEVEL

- Black, gray and light gray
- Flat

Notes:

- Minor color differences may occur due to batch variation and from exposed service, but corrosion protection will not be compromised
- For best results, use black or gray color as first coat

BASIC DATA AT 20°C (68°F)

Data for product	
Number of components	One
Mass density	1.9 kg/l (16.0 lb/US gal)
Volume solids	72 ± 2%
VOC (Supplied)	Directive 2010/75/EU, SED: max. 210.0 g/kg max. 420.0 g/l (approx. 3.5 lb/US gal) EPA Method 24: 390.0 g/ltr (3.3 lb/USgal)
Recommended dry film thickness	125 - 250 µm (5.0 - 10.0 mils) depending on requirements
Theoretical spreading rate	5.8 m²/l for 125 µm (231 ft²/US gal for 5.0 mils) 2.9 m²/l for 250 µm (115 ft²/US gal for 10.0 mils)
Dry to handle	24 hours
Overcoating Interval	Minimum: 6 hours
Shelf life	At least 24 months when stored cool and dry

Notes:

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- VOC data by EPA Method 24: consider DMC (DiMethyl Carbonate) as exempt
- See ADDITIONAL DATA – Spreading rate and film thickness
- See ADDITIONAL DATA – Overcoating intervals
- See ADDITIONAL DATA – Curing time

RECOMMENDED SUBSTRATE CONDITIONS AND TEMPERATURES

Substrate conditions of carbon steel for insulated and non-insulated service

- Must be free of oil, dirt, grease and all other contaminants, especially salts
- Round off all rough welds and sharp edges. Remove weld spatter.
- Recommended is dry abrasive blast cleaning to SSPC SP6, “Commercial Blast” (ISO Sa2) with a 25 to 50 µm (1.0 to 2.0 mils) profile
- Alternative methods to abrasive blast cleaning include: ISO St2 (SSPC SP2), ISO St3 (SSPC SP3), SSPC SP15 or SSPC SP WJ-2 or WJ-3 with dry surface
- For application in cryogenic service and for application over inorganic zinc (IOZ), refer to the PPG HI-TEMP 1027 Application Guide
- For service not exceeding 150°C (300°F) please contact PPG representative

Substrate conditions of stainless steel for insulated and non-insulated service

- Suitable austenitic stainless grades for PPG HI-TEMP 1027 are 304, 316 and 410. For other stainless steel grades, please contact PPG Technical Support.
- Must be free of oil, dirt, grease and all other contaminants, especially salts
- Round off all rough welds and sharp edges. Remove weld spatter.
- Lightly abrasive blast in accordance with SSPC SP16 requirements or otherwise abrade the surface to ensure a uniform and dense surface profile of at least 25 µm (1.0 mil)
- Temperature not to exceed 540°C (1000°F) under cyclic conditions

Substrate temperature and application conditions

- Substrate temperature during application should be between 10°C (50°F) and 316°C (600°F)
- Substrate temperature during application should be at least 3°C (5°F) above dew point
- Relative humidity during application should not exceed 85%, and good ventilation is required
- Application to hot substrate: should be above 50°C (122°F) and below 316°C (600°F)

Notes:

- For application to substrates over 200°C (392°F) to 316°C (600°F) a PPG representative needs to be consulted
- If the air temperature is expected to fall below 10°C (50°F) during drying, the dry time must be extended

Initial high temperature exposure when topcoated

- When topcoated, to prevent any blistering from solvent entrapment, the substrate temperature should be increased slowly at a rate of 1-2°C per minute to 177-204°C (350-400°F) and held for 2 hours. Alternatively, the initial temperature ramp up can be done in increments of 25°C (77°F) while holding at that given temperature for 20-30 min each.

Notes:

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- Before topcoating, a one off heating up to 177°C (350°F) for 2h of HI-TEMP 1027 can also be used as an alternative to the above ramping procedure

SYSTEM SPECIFICATION

Insulated and non-insulated service: applied direct to ambient or hot carbon steel

- Option 1 for insulation service:
- PPG HI-TEMP 1027: minimum 250 µm (10.0 mils) DFT continuous application using multiple spray passes. Refer to application guide for additional details.
- Option 2 for insulation service (two coat system):
- 2 coats of PPG HI-TEMP 1027 for a total system DFT of 250 - 300 µm (10.0 - 12.0 mils)
- Option 3 for high corrosive condition (C4-C5) and when sea transportation is necessary:
- PPG DIMETCOTE 9: 50 to 75 µm (2.0 to 3.0 mils) DFT
- PPG HI-TEMP 1027: 250 to 300 µm (10.0 to 12.0 mils) DFT

Notes:

- Hot application is not applicable to PPG DIMETCOTE 9
- Systems with PPG DIMETCOTE 9 as a primer can withstand service temperatures up to 650°C (1200°F) provided that DFT for PPG DIMETCOTE 9 is between 50 to 65 µm (2.0 to 2.5 mils)
- For non-insulated service, PPG HI-TEMP 1027 is compatible with PPG HI-TEMP topcoats to their respective maximum service temperatures: PPG HI-TEMP 500 or PPG HI-TEMP 1000. Consult a PPG representative for application to hot substrates.

Insulated and non-insulated service: applied direct to ambient or hot stainless steel

- PPG HI-TEMP 1027: 150 to 250 µm (6.0 to 10.0 mils) DFT continuous application with multiple spray passes

Notes:

- For non-insulated service, PPG HI-TEMP 1027 is compatible with PPG HI-TEMP topcoats to their respective maximum service temperatures: PPG HI-TEMP 500 or PPG HI-TEMP 1000. Consult a PPG representative for application to hot substrates.

INSTRUCTIONS FOR USE

- PPG HI-TEMP 1027 is a heavy bodied material; use mechanical agitation for mixing immediately before application and as needed during application. Be sure any settled solids are incorporated during mixing. If thinning is needed, thin only with PPG thinners and in accordance with applicable regulations. Agitate as needed during application.
- For application to hot substrate, apply multiple thin passes of PPG HI-TEMP 1027. This process, similar to mist coating, prevents blistering and also allows solvent to escape. If blisters are observed, immediately brush out the blisters before they set, using a wire brush.
- Spray application is recommended, but when it is not possible, may be applied using roller or brush. For more specific instructions regarding roller and brush application, refer to the "PPG HI-TEMP 1027 Application guidelines".

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Air spray

- No thinner is recommended

Nozzle orifice

1.8 – 2.2 mm (approx. 0.070 – 0.087 in)

Nozzle pressure

0.4 - 0.6 MPa (approx. 4 - 6 bar; 58 - 87 p.s.i.)

Airless spray

- No thinner is recommended

Nozzle orifice

Approx. 0.48 mm (0.019 in)

Nozzle pressure

12.0 - 16.0 MPa (approx. 120 - 160 bar; 1741 - 2321 p.s.i.)

Note:

- Use the lowest possible spraying pressure to avoid dry spraying
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Brush/roller

Recommended thinner

Application below 50°C (122°F): THINNER 21-06 (AMERCOAT 65)

Application from 50°C (122°F) to 149°C (300°F): Thinner 21-25 (Amercoat 101)

Volume of thinner

Up to 5% THINNER can be added if desired

Note:

- Due to thixotropic nature of the paint, it is difficult to obtain a smooth film by brush, although this does not affect performance
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Cleaning solvent

- THINNER 21-06 (AMERCOAT 65)
 - THINNER 21-25 (AMERCOAT 101)
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ADDITIONAL DATA

Spreading rate and film thickness	
DFT	Theoretical spreading rate
125 µm (5.0 mils)	5.8 m ² /l (231 ft ² /US gal)
150 µm (6.0 mils)	4.8 m ² /l (192 ft ² /US gal)
200 µm (8.0 mils)	3.6 m ² /l (144 ft ² /US gal)
250 µm (10.0 mils)	2.9 m ² /l (115 ft ² /US gal)
300 µm (12.0 mils)	2.4 m ² /l (96 ft ² /US gal)

Overcoating interval for DFT up to 250 µm (10.0 mils)					
Overcoating with...	Interval	10°C (50°F)	20°C (68°F)	38°C (100°F)	150°C (302°F)
itself	Minimum	24 hours	8 hours	5 hours	15 minutes
	Maximum	Unlimited	Unlimited	Unlimited	Unlimited
PPG HI-TEMP 500 or PPG HI-TEMP 1000	Minimum	24 hours	8 hours	5 hours	15 minutes
	Maximum	Unlimited	Unlimited	Unlimited	Unlimited

Curing time for DFT up to 250 µm (10.0 mils)			
Substrate temperature	Dry to recoat/topcoat	Dry to handle/ship	Dry to insulate/service
10°C (50°F)	16 - 24 hours	36 hours	3 days
20°C (68°F)	6 - 8 hours	24 hours	48 hours
38°C (100°F)	4 - 6 hours	16 hours	36 hours
150°C (302°F)	15 minutes	N/A	N/A

Notes:

- For insulation, the drying times have to be doubled from dry to handle time to ensure sufficient solvent evaporation
- Drying times can vary based on environmental and substrate conditions. Do not exceed maximum dry film thickness recommendations as this can affect dry times.
- When operating temperature is less than 150°C (300°F), the coating is tough and durable. PPG HI-TEMP 1027 will increase and maintain a hardness of 2H when it is heated more than 150°C (300°F).

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SAFETY PRECAUTIONS

- The product is for use only by professional applicators in accordance with information in this product data sheet and the applicable material safety data sheet (MSDS). Refer to the appropriate MSDS before using this material. All use and application of this product should be performed in compliance with all relative federal, state and local, health, safety and environmental regulations or in compliance with all pertinent local, regional and national regulations as well as good safety practices for painting, and in conformance with recommendations in SSPC PA 1, "Shop, Field and Maintenance Painting of Steel."

WORLDWIDE AVAILABILITY

It is always the aim of PPG Protective & Marine Coatings to supply the same product on a worldwide basis. However, slight modification of the product is sometimes necessary to comply with local or national rules/circumstances. Under these circumstances an alternative product data sheet is used.

REFERENCES

- Information sheet | Explanation of product data sheets
- Guide | PPG HI-TEMP 1027 | Application guidelines

WARRANTY

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