



Heat-Flex™ Hi-Temp 1200

Advanced corrosion under insulation (CUI) protection

Heat-Flex™ Hi-Temp 1200 is the industry's next generation CUI solution for high heat applications. This single component, inert multi-polymeric matrix coating exhibits excellent flexibility and long term durability – consistently outperforming comparable alternatives in resistance to heat, corrosion and thermal shock. Just as importantly, Heat-Flex™ Hi-Temp 1200 features improved mechanical resistance, minimising damage due to aggression during transportation and erection of shop fabricated modules.



Benefits

Extended lifecycle – improved corrosion resistance. Rigorous testing indicates:

- No adhesion loss.
- No blistering.
- Increased flexibility.

Less damage from shop to field – enhanced durability

- Greater abrasion resistance.
- Harder initial film.

Faster shop throughput – enhanced shop coating properties

- Faster dry to touch.
- Faster recoat times.
- Lower VOC's.

Improved corrosion resistance

Performance in accelerated test protocols show Heat-Flex™ Hi-Temp 1200 outperforms comparable products with no adhesion loss and excellent ratings for rust and blistering.

Boiling water test

The boiling water test was developed by the in-house lab of an oil major to qualify CUI coatings used at their own facilities. The test measures a coatings performance when subjected to thermal shock in a simulated immersion scenario. Today, this boiling water test is recognised as the gold standard for accelerated testing of heat-resistant coatings for use under insulation.

Test method

First apply two coats to hot steel at 260°C (500°F) and hold at a constant temperature of 204°C (400°F) for 16 hours. Panels are then submerged into room temperature water and examined for failure. After review, the panels are placed in a water bath that is maintained at 99°C (210°F) for eight hours. The panels are then rated to ASTM D714, Standard Test Method for Evaluating Degree of Blistering of Paints, and ASTM D610 Standard Test Method for Evaluating Rusting on Painted Steel Surfaces. The panels are put through the same process for a total of 80 cycles.

Results

Heat-Flex™ Hi-Temp 1200, due in part to increased flexibility, outperformed competitive product with better corrosion resistance, no adhesion loss and no blistering after 80 cycles.

Corrosion under insulation test

Sherwin-Williams' rigorous CUI testing protocol, developed by its industry recognised R&D lab, gauges the coatings performance in real-world scenarios involving typical CUI mechanisms as outlined in NACE Standard SP0198-2010.

Test method

First apply two coats to hot steel at 260°C (500°F), allowing the panels to cool for one hour. The coated panels are then placed between acidic and alkaline thermal insulation, along with an uncoated panel for a baseline comparison, in an oven at 176°C (350°F) for seven days. The insulation is saturated with tap water and placed in an oven maintained at 65°C (150°F) to accelerate the corrosion mechanism, and held for seven days, adding water as needed to maintain saturation. After this first cycle, panels are rated for rust and blistering. A total of six cycles are completed over 12 weeks.

Results

Heat-Flex™ Hi-Temp 1200 passed with no loss of adhesion, and received a #10 rating for rusting and blistering, the best possible rating under ASTM D 714 and D610. These results outperform competitor products.

Corrosion under insulation, calcium silicate, 6 cycles



Competitor A Competitor B Heat-Flex™ Hi-Temp 1200 Control

Corrosion Under Insulation, Mineral Wool, 6 cycles



Competitor A Competitor B Heat-Flex™ Hi-Temp 1200 Control

Durability in transit from shop to field

Heat-Flex™ Hi-Temp 1200 features enhanced durability, minimising the damage caused by transporting steel from shop to site.

Sherwin-Williams conducted numerous ASTM durability tests. Results indicated Heat-Flex™ Hi-Temp 1200 outperforms competitive products in all durability tests performed.

- ASTM D4060 Standard Test Method for Abrasion Resistance of Organic Coating by Taber Abrader, where a smaller wear index (0.1894) indicates greater abrasion resistance
- ASTM D5222 Standard Test Methods for Mandrel Bend Test of Attached Organic Coatings, where the condition of the coating at the “bend site” are visually examined and evaluated for flexibility and crack resistance
- ASTM D968, Standard Test Method for Abrasion Resistance of Organic Coatings by Falling Abrasive, where a larger volume of sand (16.4 L/mil) indicates greater abrasion resistance
- ASTM D3363, Standard Test Method for Film Hardness by Pencil Test where film hardness is rated from 6B (softest) to 6H (very hard).



ASTM durability test results

ASTM Test	Competitor A	Competitor B	Heat-Flex™ Hi-Temp 1200
Abrasion Resistance Milligram Loss (ASTM D4060)	863	695	189
Abrasion Resistance Falling Sand (ASTM D968)	2.4 L/mil*	0.8 L/mil*	16.4 L/mil*
Flexibility (ASTM D522)	100% Failure	100% Failure	1 3/4"
Direct Impact (ASTM D2794)	<20 in lb	<20 in lb	80 in lb
Pencil Hardness (ASTM D3363)	4B	6B	2H

*Larger volume of sand indicates greater resistance.

Enhanced shop coating properties

Sherwin-Williams understand the importance of faster throughput and the mandates in managing VOCs. Heat-Flex™ Hi-Temp 1200 provides lower VOCs, faster recoat times and faster dry to touch, saving time and money.



The Sherwin-Williams difference

By putting our customers first, we know that the innovation, imagination, research and development we put into each and every product will be worth it. You are at the centre of our thinking wherever we operate around the world across five continents whether it is advice, specification or on-site inspection. You are the reason we exist. This is the Sherwin-Williams difference.



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