

# CUI and Cyclic Temperature Solutions

Maintenance Solutions for Downstream Oil & Gas



# High Temperature Maintenance Range

Maintenance on process pipe, valves and vessels in CUI risk zones is a major challenge

## Corrosion Under Insulation

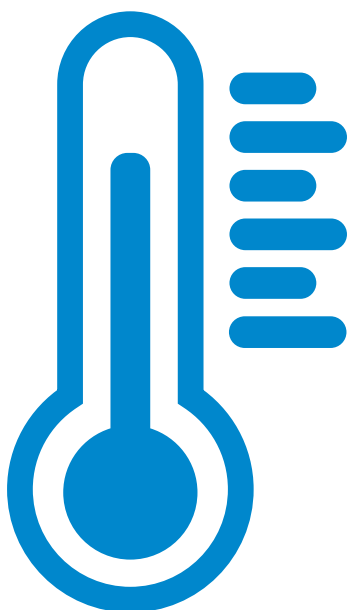
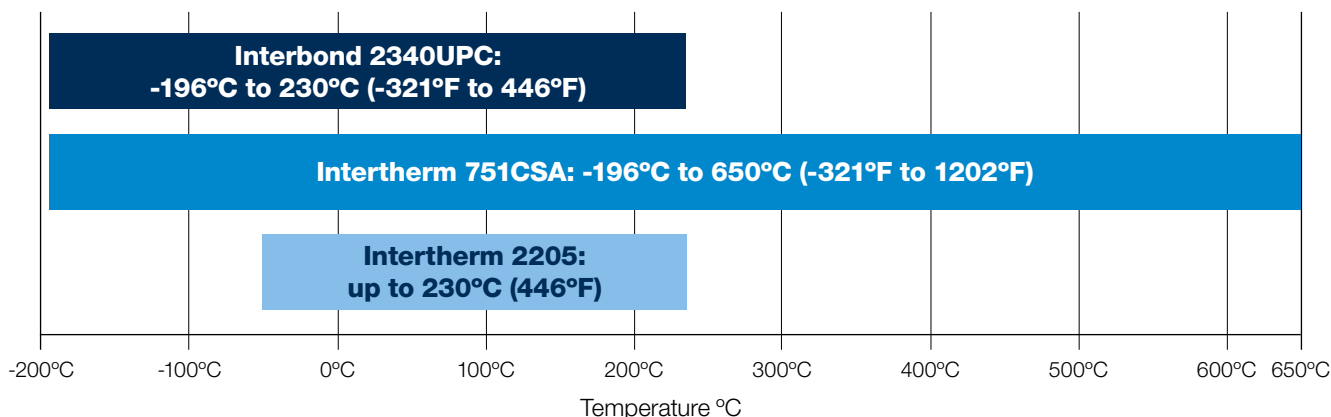
The problem of corrosion under insulation (CUI) costs industry millions of dollars annually. Moisture ingress into conventional insulation materials usually results in accelerated corrosion of the underlying steel surface which, if left unchecked, can result in structural failure of the pipe, vessel or other insulated items.

Industry challenges such as CUI can be a huge issue for facilities and put added pressure on maintenance strategies.

- CUI maintenance work can take up >50% of a typical Oil & Gas facility maintenance budget
- CUI can cause catastrophic failure if left unchecked
- The large cost of scaffolding, stripping/recladding insulation and labour during the maintenance turnaround process means that CUI coatings need to be relied on for long term performance

## CUI and Cyclic Temperature Solutions

The High Temperature Maintenance (HTM) range from AkzoNobel has been designed to increase performance, improve productivity and reduce cost of high temperature maintenance.



### Interbond 2340UPC

**-196°C to 230°C**  
**(-321°F to 446°F)**

Reduce risk of early failure and maximise productivity vs traditional solutions

### Intertherm 751CSA

**-196°C to 650°C**  
**(-321°F to 1202°F)**

Renowned 'Cold Spray Aluminium' technology with excellent CUI and thermal cyclic resistance

### Intertherm 2205

**up to 230°C**  
**(446°F)**

No need for shutdowns - application directly to high temperature online equipment

# Versatile CUI Maintenance

Maintenance is an ongoing challenge all year round, and solutions need to be resilient to varying atmospheric conditions. Typically, traditional epoxy phenolic coatings for CUI service will not cure below 10°C (50°F) which can cause issues in the winter months, reducing productivity. Traditional epoxy phenolic coatings also show poor tolerance to over application which is a particular challenge in maintenance due to overapplication at overlap areas, as well as the variation of profile on pitted steel leading to areas of high DFT. This stresses the coating and can cause cracking during high temperature service.

## Interbond 2340UPC

With outstanding corrosion protection and CUI resistance, Interbond 2340UPC challenges the performance expectations of epoxy based temperature resistant coatings. Based on alkylated amine epoxy technology, Interbond 2340UPC delivers excellent tolerance to over application, fast cure even at sub-zero temperatures and unrivaled impact and damage resistance. This reduces the need for remedial work, minimizing overall application costs whilst maximising productivity. The high dry film thickness (DFT) tolerance greatly reduces the potential for cracking in service, helping to ensure excellent resistance to CUI and aggressive cyclic conditions in service.

- Temperature resistance and corrosion protection from -196°C (-321°F) to 230°C (446°F)
- Provides protection against CUI
- Low temperature cure down to -5°C (23°F)
- Excellent tolerance to over application
- Short minimum overcoating intervals
- Suitable for application to steel substrates operating at temperatures up to 120°C (250°F)

# Cyclic Temperature Service

Cyclic temperature service is common in industrial processes and known to be particularly damaging to protective coating systems. This damage is usually due to the increased stress that regular cycling can put on a coating film, sometimes leading to cracking and early failure.

## Intertherm 751CSA

Intertherm 751CSA is a high performance, temperature resistant “Cold Spray Aluminum” coating based on titanium modified inorganic copolymer technology. Intertherm 751CSA has been developed as a result of more than 10 years’ extensive research and development into high temperature corrosion mechanisms. The material is particularly resistant to high temperature cyclic conditions up to 650°C (1202°F) and CUI environments. Backed up by a long in-service track record, Intertherm 751CSA is the ultimate choice for CUI protection.

- Temperature resistance and corrosion protection from -196°C (-321°F) to 650°C (1202°F)
- Excellent resistance to “thermal shock” experienced during rapid temperature cycling
- Provides protection against CUI
- Can be applied at 200um (8 mils) in a single coat using standard application equipment
- Suitable for application to steel substrates operating at temperatures up to 150°C (302°F)

# Maintenance of Operational Assets

Optimum plant operation demands increased efficiency and reduced downtime as much as possible. This means that the shutdown of assets prior to starting maintenance is not always possible.

High temperature pipes, valves and vessels sometimes require online application at temperatures up to 205°C (401°F). This can cause challenges for traditional coating technologies which are typically not formulated with online maintenance in mind, often leading to early failure.

## Intertherm 2205

Intertherm 2205 is a specialist temperature resistant maintenance coating, designed to resist CUI and cyclic high temperatures up to 205°C (401°F), with peaks to 230°C (446°F). Intertherm 2205 shows excellent application characteristics and can be brush applied to hand prepared, hot steel up to 205°C (401°F)

Intertherm 2205 is based on a novel technology called 'hot spread epoxy' developed in house by AkzoNobel. Viscous in appearance, the coating spreads rapidly when applied directly to online equipment, forming an effective barrier against corrosion, even on St2 (SP2) steel. Hot spread epoxy technology is a high solids material specifically formulated to provide asset owners maximum performance in CUI maintenance environments.

- Temperature resistance and corrosion protection up to 230°C (446°F)
- Hot application to live equipment up to 205°C (401°F)
- Provides protection against CUI
- Cures ready to insulate after 10 minutes\*
- Excellent adhesion to steel cleaned by hand or power tool (St2/SP2 preparation)
- Easy application by brush or roller
- Low VOC

\*When applied at temperatures above 100°C (212°F)

## High Temperature Maintenance Range

Product	Maximum Operating Temperature	Maximum Application Temperature	Minimum Surface Preparation	Time to Reinsulation	
				Applied at 20°C (68°F)	Applied at 100°C (212°F)
<b>Interbond 2340UPC</b>	205°C/230°C peak (401°F/446°F)	120°C (248°F)	St2 (SP2), SP11	12 hours	2 hours
<b>Intertherm 751CSA</b>	650°C (1202°F)	150°C (302°F)	SP11	24 hours	2 hours
<b>Intertherm 2205</b>	205°C/230°C peak (401°F/446°F)	205°C (401°F)	St2 (SP2)	N/A	10 minutes

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