THERMOSHIELD®

thermal insulation coating

Rio Tinto ammonium nitrate storage facility corrosion control

CORROSION control

THERMOSHIELD PROUDLY MADE IN AUSTRALIA

THERMOSHIELD REDUCES CARBON FOOTPRINT

10 YEAR warranty IF APPLIED BY THERMOSHIELD APPROVED APPLICATORS

ISO 9001 & 14001 Certified

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INTRODUCTION

In December 2010, a representative from Rio Tinto approached Thermoshield in reference to attempting to resolve part of an "$80million dollar a year corrosion problem" across the wider business after samples were sent from Thermoshield's W.A distributer, to Rio Tinto.

After theoretical due diligence was undertaken to gauge whether ammonium nitrate would affect the ceramic coating (by both firms), a purlin was coated with the Thermoshield coating & given to Rio Tinto for practical testing. The purlin was then placed in the storage facility for nearly 18 months. In that time, the purlin appeared to show no signs of product degradation or corrosion on the encapsulated metal. The decision was made to proceed with Thermoshield to protect the new ammonium nitrate facility.

Ammonium Nitrate (AN) a very volatile chemical compound that is extremely corrosive in both direct contact with metal and also vapour exposure. The storage of AN is a crucial element to mining operations. If the AN were to become wet/damp or over heated, it loses it's explosive chemical trait (oxidisation properties). The AN itself is highly corrosive and rapidly rusts through the metal structure housing it. If the AN were to become exposed to adverse environmental elements, product failure could occur which would result in blast misfires & major mining production disruptions.

Typically, AN facilities have an average lifespan of up to 5 years (approx) due to rapid corrosion. An application of Thermoshield comes with a guaranteed warranty of 10 years including an annual inspection as well as open communication & feedback.

We are confident that if Thermoshield maintains its integrity during early stages (which it has shown to do) we believe that the AN facility life span can far exceed not just the 10 year warranty. In 15 years of operation, Thermoshield are yet to have a warranty claim.

THERMOSHIELD – MEAUSURES TAKEN TO ENSURE PEACE OF MIND

Thermoshield have endeavoured to put in place measures to ensure an investment in a Thermoshield ceramic coating is a long term, riskless infrastructure investment.

In conjunction with Rio Tinto – Thermoshield have suggested (& implemented) the below measures be in place to ensure long term peace of mind for Rio Tinto:

- 10 year warranty
- 4 inspections in the first year, then annual inspections for the life of the warranty
- Any remiedial work required – will be at the expense of Thermoshield Australia

WHY IS THERMOSHIELD SO RESILIENT TO HEAT & CORROSION

What makes Thermoshield so unique and effective is the fact that it is a 'high solids' ceramic coating – rather than simply being a high quality external paint or a basic elastomeric coating. Over time, as a coating becomes tarnished and loses its brilliant white appearance, the surface can begin to absorb heat, rather than reflect.

Thermoshield coating insulates, thanks to 'dead air' created by ceramic beads that prevents heat transfer in a manner similar to basic insulation principles.

The classic properties of ceramics include:

- Durability
- Strength
- Outstanding adhesion
- High (often extreme) thermal resistance
- High electrical resistance - eliminates galvanic corrosion
- Resistant to plastic deformation

With the ability to withstand the damaging effects of:

- Acids & alkaline, salts & gases
- Oxygen & water (essential requirement for corrosion) &
- Chemical compounds (such as ammonium nitrate) due to their chemical inertness

Compressive strength makes ceramics good structural materials. Hardness, abrasion resistance, imperviousness to high temperatures and extremely caustic conditions allow ceramics to be used in special applications where no other material can be used.

Thermoshield's adhesion is unrivalled compared to external paint, particularly when exposed corrosive environments over prolonged periods due to a 'high volume of solids'.

Some ceramics (such as Thermoshield) exhibit low thermal conductivity and/or high electrical insulation. The combination of these properties means that ceramics can provide:

- High wear resistance with low density
- Wear resistance in corrosive environments
- ***Corrosion resistance at high temperatures***

Thermoshield also creates a non-permeable flexible (elastomeric) membrane which acts to encase the substrate keeping it safe from corrosion element. This will significantly prolong the life of your asset – particularly in coastal areas or caustic environments.

The technology, known as advanced ceramics or fine ceramics are used in such specialised areas such as tiles used in the space shuttle program, ballistic protection, bio-medical implants and jet engine turbine blades – ect…

AMMONIUM NITRATE FACILITY BEFORE REFURBISHMENT – SITE INSPECTION

Both sheds had become highly unsafe, structural integrity had been compromised and the sheds were incapable of their primary function of keeping the AN unexposed to environmental elements.

Below are a series of before shots:

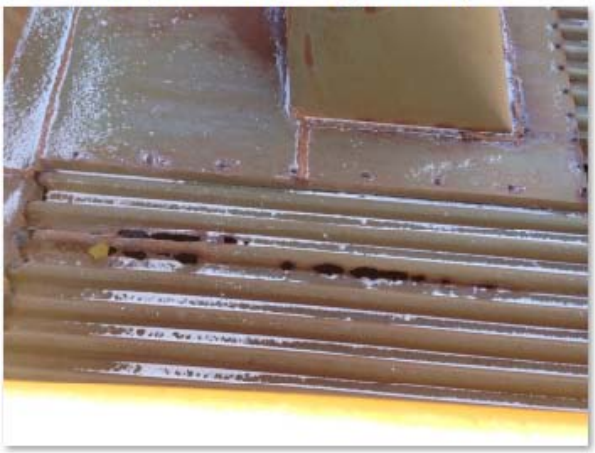
* A shot of the sheds - from a distance:

*An indication of the volumes of explosives stored

*Closer inspection of external cladding

*Sheets corroded through - major falling hazard

*Roof sheeting corroded in corrugation 'troughs'



*Internal wall sheeting - imminent risk of falling

Internal framework severely corroded as well as wall sheeting:

*Each storage bay - severely corroded framework

*Visible holes through sheeting from long distance

*All bays of both sheds under identical duress

*Replaced sheets in bay 1 - with 'protective' coating

The below shot shows that the front apron of the sheds, which aren't in direct contact with the ammonium nitrate are equally as corroded simply through vapour exposure:

Finally, we'll demonstrate the extent of structural framework corrosion by more closely examining the below pile of discarded purlins:

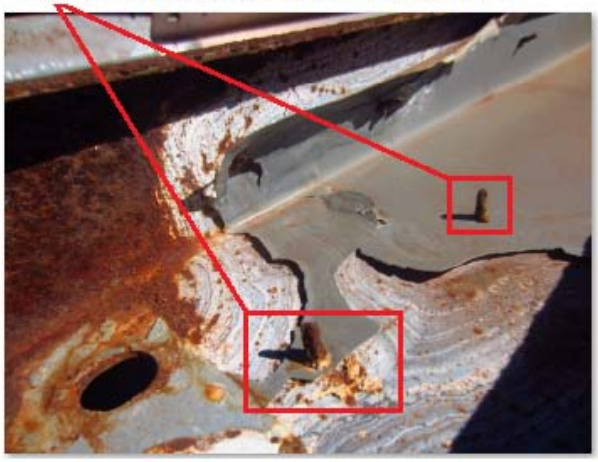
You can see on closer inspection that all purlins were unable to remain protected by the coating and the structural integrity of the storage sheds was severely compromised:

*When coating is 'flaked' off - reveals extent of corrosion

*Protective coating inflexible & unable to adhere

*Engineers deemed purlins contained hairline cracks

*Tech screws provided entry points for corrosion



CONSTRUCTION PROCESS – METHODOLGY IMPLEMENTED

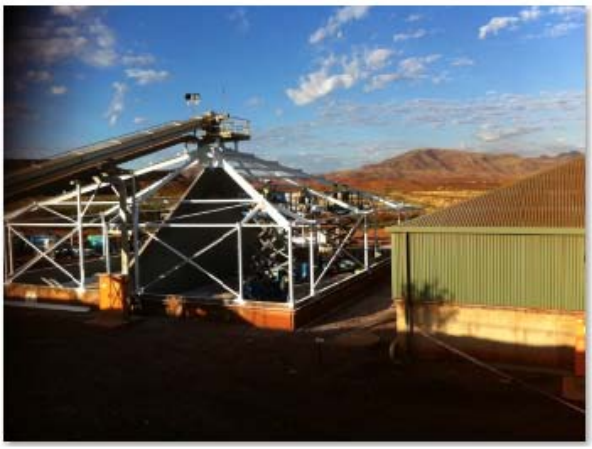
Prior to work commencing – Thermoshield, Pristine, N & KA Mouritz & Rio Tinto had to carefully plan the order in which construction would take place because of the need to coat all areas, both internally & external. This is due to the fact any exposed metal would be attacked by the ammonium nitrate vapour & corrode from the side out.

If wall sheeting were installed before framework penetrations were to be coated, significant structural integrity would be at risk of failure.

PRIOR TO WORK COMMENCING EACH DAY – PRE STARTS WERE CONDUCTED, JSA's COMPLETED, 'TAKE 5's' COMPLETED & HAZARDS WERE DISCUSSED AT LENGTH

I'll now demonstrate the step by step processes & precautions taken:

*Shed 1 dismantled - shed 2 remained operational



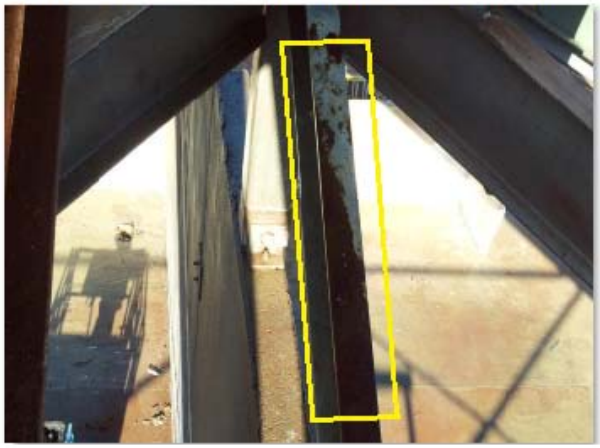
*Framework powerwashed, etched & coated from within EWP basket whilst harnessed

The few areas of framework that had maintained structural integrity yet had been still effected by corrosion, were able to be kept and directly coated with Thermoshield.

Thermoshield contains very strong corrosion inhibitors, to eliminate any further rusting. Once applied, the ceramic coating converts rust to iron phosphate.

*Framework power washed & etched primer coated

*Thermoshield applied directly on to moderate rust



The framework was thoroughly encased from all possible angles whilst being harnessed inside the scissor lift. A heavy initial first coat was applied so that direct contact with other metals (such as roof sheets and wall sheets) was impossible. This resulted in the inability for dirt/grit, water, oxygen and vapour to access between & the framework & sheeting.

Essentially, the framework had been 'entombed':

The next stage was a pre-determined decision to power wash, etch & apply an initial coat of Thermoshield to all sheeting prior to installation to again, ensure that no metals come in direct contact with one another.

Normally, etch primer isn't required for coating of zincalume or galvanised however, brand new sheets have an oily residue left on them from production. This 'milling oil' has the potential to prevent perfect contact. Therefore sheets were power washed and the added precaution was taken of etch priming:

*Sheets treated & coated prior to installation

*The Pristine crew at their efficient best pre-coating

Once dried, the coated sheets were re-stacked and covered for the Mouritz roofing team to cut to size & install.

Mouritz roofing crew proceeded to systematically install the sheeting. Thermoshield & Pristine had specially requested that the utmost care was taken in ensuring sheets were installed as close to 'flush' contact from sheet to sheet so that the coating crew weren't in a position where they had to 'build up' 3-5mm of product to fill any gaps.

If there were gaps, the likelihood of potential corrosion would greatly increase, despite sheets already having an initial coating.

*Harnesses worn - rope length set to correct length

*Highly experienced, high efficiency & precision

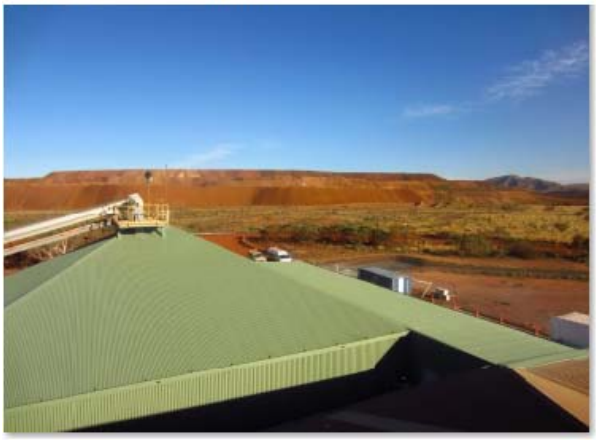
*Roofers then installed ridge caps & gutters which coating crew would apply second coat internally

Pristine coating crew proceeded to apply 2nd external coat & upon completion & adequately dry, immediately began the final external coat in 'pale eucalyptus':

*Second external coat - white

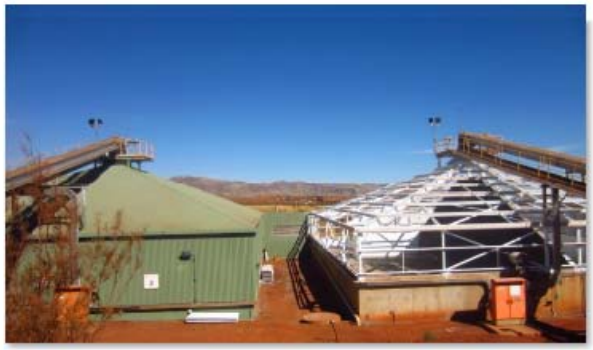
*Third external coat - pale eucalyptus

*Shed 1 was then completed



*Bays 1 & 2 were now able to take delivery of AN

Roofers were then able to commence dismantling shed 2 & the entire process would repeat given that the sheds are identical:



PROJECT COMPLETION

THE PROJECT FINISHED ON BUDGET & AHEAD OF SCHEDULE

This is largely due to the professionalism & highly skilled workmanship completed by both N & KA MOURITZ roof plumbing & also PRISTINE painting & decorating.

Credit must go to the Rio Tinto project managers who appeared to have significant experience in large scale infrastructure construction. The level of materials knowledge, processes involved for each crew & time required to perform tasks showed a very in-depth knowledge of construction. No crews were ever left waiting for equipment or access to machinery which no doubt contributed to the schedule & budget being met.

*Completed sheds

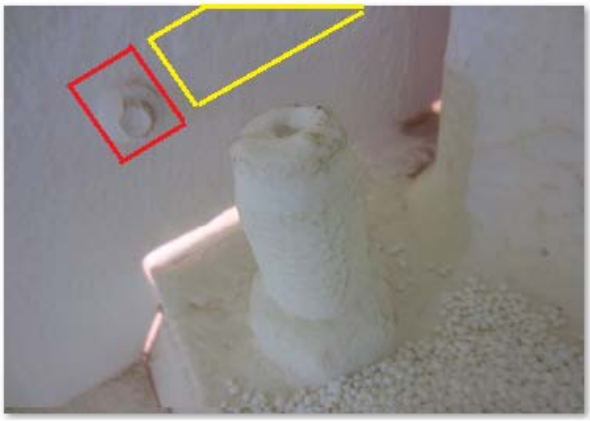
*Drill & Blast collecting AN from completed facility

*SHED 1 - BEFORE

*SHED 1 - AFTER

*Extreme close up shows the entire encapsulation

*Sheet joins, penetrations & screw/bolt thread sealed



MAJOR SAFETY PRECAUTIONS IMPLEMENTED

Careful planning was taken in order to prevent the risk of injury. This was a direct requirement as stated by the project co-ordinator Jacob Taylor.
Below show the most effective measures implemented:

The appicators spray approx 1.5-2 meters onto to roof, from within the scissor lift, whilst harnessed prior to roof application

So that when harnessed, the length of rope was set to a maximum length so the applicator could reach only the farthest 'cutting in' point

The result would mean if someone were to slip/fall, they remained on the roof, not a free fall ending in a signifcant 'jolt' which could cause **major joint or soft tissue injury**

All wall & roof sheets were pre coated with a light "dust coating" of Thermoshield

This results in a **significant** increase in 'grip' as Thermoshield has a dry, slighty coarse finish which allowed for roofers & painters to walk/work confidently & safely whilst harnessed on the roof.

Both roofers & painters commented how much grip was gained, opposed to common steel which is slippery in both dry & wet.

NEWS TRAVEL FAR & WIDE – RIO TINTO WORLDWIDE PUBLICATION

After 18 months of research & due diligence, the team as West Angelas must be delighted to have their hard work recognised far & wide to their peers.

Ammonium nitrate storage has been a hugely expensive & hazardous issue clouding the industry for decades. Hopefully Thermoshield along with Rio Tinto can build on this case & continue to solve corrosion & heat issues within mining organisations far & wide.

Thermoshield ceramic coating was first exposed to ammonium nitrate in early May upon completion of the first shed.

After nearly a month, many people were confident that signs of failure would have already surfaced & word was spread of its impending success.

This resulted in a project description being included in the Rio Tinto monthly publication that is distributed world wide in the July 2012 edition.

Renovation rescue on ammonium nitrate sheds

The ammonium nitrate storage sheds at West Angelas have undergone a major renovation to tackle corrosion.

The prilled ammonium nitrate causes steel to corrode especially when warm.

The steel clad sheds have been painted with a thermal liquid ceramic paint to lower radiant heat and the resulting corrosion.

A company called Thermoshield Australia applied the liquid insulation which it will warrant for ten years, carrying out maintenance audits during this period to ensure corrosion does not reoccur.

Before the new paintjob, the sheds received some structural repairs and a new electrical fit out.

Project coordinator Jacob Taylor said it was fantastic to have an improved facility after 18 months of work.

"If this liquid insulation works as well as we expect, it could be a solution for other sites," Jacob said.

INSPECTION CHECKLIST

RIO TINTO - WEST ANGELAS
AMMONIUM NITRATE FACILITY - INSPECTION CHECKLIST

DATE:

THERMOSHIELD
thermal insulation coating

SHED 1 - BAYS 1 & 2 EAST SHED	SIGNS OF CORROSION OR PRODUCT FAILURE	
	INTERIOR	EXTERIOR
Bay 1 - *Side wall (east facing)*		
Tech screw penetrations	☐	☐
H section framework	☐	☐
Purlins	☐	☐
Wall sheets	☐	☐
Bay 1 - *Roofing section*		
Tech screw penetrations	☐	☐
Interior framework	☐	☐
Roof sheets	☐	☐
Bay 1 - *Back wall (north facing)*		
Tech screw penetrations	☐	☐
H section framework	☐	☐
Purlins	☐	☐
Wall sheets	☐	☐
Bay 1 - *Front apren (south facing)*		
Tech screw penetrations	☐	☐
H section framework	☐	☐
Purlins	☐	☐
Wall sheets	☐	☐
Bay 2 - *Side wall (west facing)*		
Tech screw penetrations	☐	☐
H section framework	☐	☐
Purlins	☐	☐
Wall sheets	☐	☐
Bay 2 - *Roofing section*		
Tech screw penetrations	☐	☐
Interior framework	☐	☐
Roof sheets	☐	☐
Bay 2 - *Back wall (north facing)*		
Tech screw penetrations	☐	☐
H section framework	☐	☐
Purlins	☐	☐
Wall sheets	☐	☐
Bay 2 - *Front apren (south facing)*		
Tech screw penetrations	☐	☐
H section framework	☐	☐
Purlins	☐	☐
Wall sheets	☐	☐

SHED 2 - BAYS 3 & 4 WEST SHED	SIGNS OF CORROSION OR PRODUCT FAILURE	
	INTERIOR	EXTERIOR
Bay 3 - *Side wall (east facing)*		
Tech screw penetrations	☐	☐
H section framework	☐	☐
Purlins	☐	☐
Wall sheets	☐	☐
Bay 3 - *Roofing section*		
Tech screw penetrations	☐	☐
Interior framework	☐	☐
Roof sheets	☐	☐
Bay 3 - *Back wall (north facing)*		
Tech screw penetrations	☐	☐
H section framework	☐	☐
Purlins	☐	☐
Wall sheets	☐	☐
Bay 3 - *Front apren (south facing)*		
Tech screw penetrations	☐	☐
H section framework	☐	☐
Purlins	☐	☐
Wall sheets	☐	☐
Bay 4 - *Side wall (west facing)*		
Tech screw penetrations	☐	☐
H section framework	☐	☐
Purlins	☐	☐
Wall sheets	☐	☐
Bay 4 - *Roofing section*		
Tech screw penetrations	☐	☐
Interior framework	☐	☐
Roof sheets	☐	☐
Bay 4 - *Back wall (north facing)*		
Tech screw penetrations	☐	☐
H section framework	☐	☐
Purlins	☐	☐
Wall sheets	☐	☐
Bay 4 - *Front apren (south facing)*		
Tech screw penetrations	☐	☐
H section framework	☐	☐
Purlins	☐	☐
Wall sheets	☐	☐

IF ANY OF THE ABOVE BOXES ARE MARKED 'YES' (ticked) PLEASE ELABORATE:

Notes: .....

.....

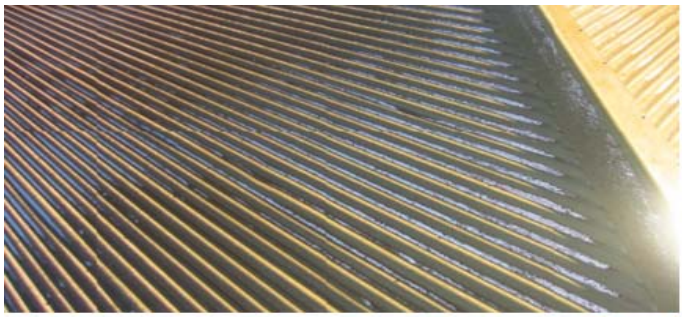
.....

THERMOSHIELD representitive:	Signed:	Date: / /
RIO TINTO representitive:	Signed:	Date: / /

3 MONTH INSPECTION OUTCOMES

As mentioned previously – a judgement on success couldn't be entertained until at least 3 months at the first scheduled inspection.

After thorough inspection by both Thermoshield Managing Director (Gavin Batty) & Rio Tinto project coordinator (Jacob Taylor), ***Found no signs of product failure or corrosion***.



3 months of 'caked on' ammonium nitrate as a result of spillage upon delivery

AN heaped to as much as 2 inches at various points

Simple hosing down intantly removes all built up AN. 3 months worth in this case.

AN build up doesn't bond to Thermoshield & easily hoses down.

The AN hasn't damaged the coating in any way under the harshest of tests

3 inch thick AN build up removed in seconds

Hosed area in isolation as a basis for comparison

You can see from a wider angle that each bay of both sheds have remained unaffected. Some red dust is starting the cover certain areas, yet there are no signs of corrosion:

* Shed 1 (west bay) - no signs of corrosion

* Shed 1 (east bay) - no signs of corrosion

* Shed 2 (west bay) - no signs of corrosion

* Shed 2 (east bay) - no signs of corrosion

You can any built up or 'caked' AN is not sticking to the ceramic coating and is getting cleared with both wind and or rain.

Overall, 3 months in – we at Thermoshield couldn't be happier with the current condition:

6 MONTH INSPECTION OUTCOMES

On October 24th 2012 – Thermoshield General Manager, Carson Batty, visited the AN facility at West Angelas with Rio Tinto project manager Jacob Taylor.

Bays 1 & 2 within shed 1 – first started storing AN in early May 2012 after the Thermoshield ceramic coating had been applied. This results in almost exactly 6 full months of exposure.

After thorough inspection, there were no signs of product failure, product de-lamination or any signs that corrosion was beginning to occur.

As previously stated, the most 'at risk' areas & most effected by corrosion are the entry & exit points for tech screw penetrations. On inspection, these areas were the most scrutinised for signs of wear, corrosion and also for any application errors that could be 'touch up' if required.

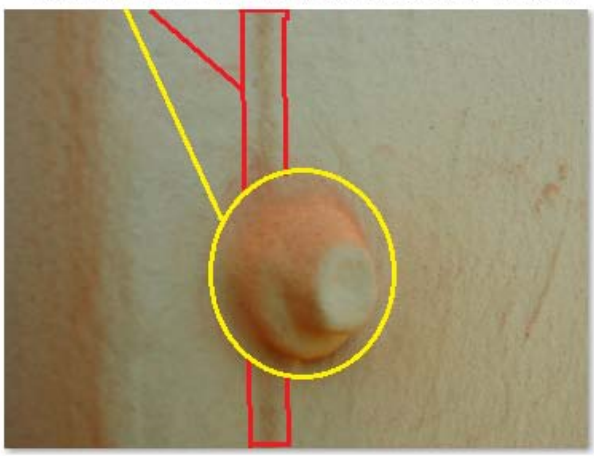
You can see from the below photos, that after 6 months, the screw penetrations still remain very much encapsulated by the flexible ceramic coating. The coating hasn't deteriorated with exposure to the harsh chemical compound & also hasn't cracked or peeled with expose to prolonged heat.

* All tech screws were hand painted in addition to spray

* Ceramic coating 'heaped' 360° around penetrations

* External tech screws fully 'sealed' - showing no wear

* Same shot - sheet joins (red) also fully sealed - no wear



Below are a series of photos from with both sheds showing that both direct AN contact and also AN vapour have been unable to penetrate the Thermoshield ceramic ‘seal’.

* Bay 2, shed 1 - no signs of corrosion or product failure

* Bay 2 - sheet joins & screws sealed. Piled AN 'harmless'

* Bay 1, shed 1 - no signs of corrosion or product failure

* Shed 1 - no causes for concern to internal roof area

* Bay 4, shed 2 - penetrations in purlins heavily sealed

* Bay 4, shed 3 - no signs of corrosion or product failure

Careful consideration was taken to encapsulate the tech screw penetrations – from an internal perspective.

Instructions were to ‘flood’ the internal purlins where tech screws had penetrated. In addition, the screws were hand ‘touched up’ in order to ensure a comprehensive seal so the AN vapour couldn’t penetrate.

The below shots show after 6 months – no signs of the seal failing to prevent AN exposure:

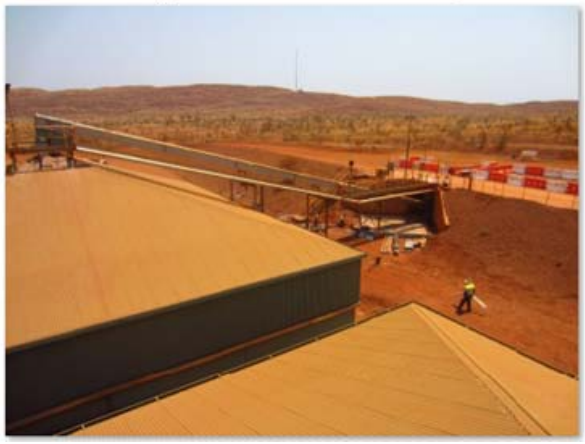
* Purlins 'flooded' - where tech screws had entered

* Tech screws touched up by hand to ensure 'seal'

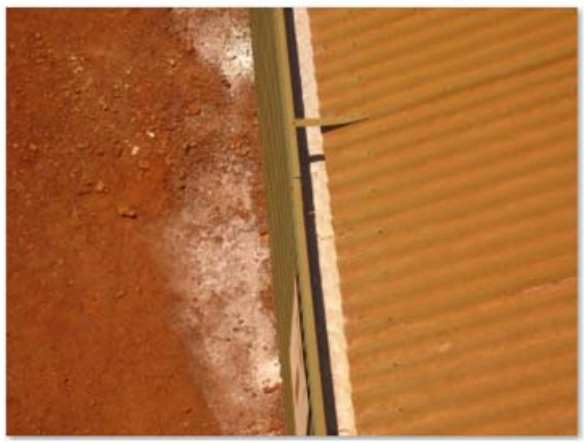
Lastly, the sheds exterior is remaining to be unaffected by AN exposure.
In the past upon taking delivery, AN would fall onto the roof sheeting where it could often pile & ultimately lead to corroding through.

We can see that any AN overflow is failing to bind to the ceramic coating. This is shown by the below photos where any AN had run off the sheets and collected in the gutters – (which also haven’t shown any signs of deterioration)

* Roof sheeting shows little to know build up of AN



* AN has ran dow the sheeting - to collect in gutters



10 MONTH INSPECTION OUTCOMES

On Thursday 11th April, myself (Carson Batty) from Thermoshield, visited the AN facility for the 3rd of the scheduled inspections – following project completion.

Of the two sheds, shed 1 was completed first & had now been storing AN for 10 months. Shed 2, was completed approximately 2 weeks following.

A member from West Angelas, Drill & Blast team accompanied me during the inspection. Following the inspection, both myself from Thermoshield & the Rio Tinto representative signed off the report.

The inspection was a success – with no signs of product failure of corrosion.

During the 10 months, the sheds have been exposed to extreme heat fluctuations and often extreme weather conditions (such as the February 2013 cyclone) & upon inspection, there were no signs of product deterioration.

* Close up of tech screw - has remained 'sealed'

* Flexible membrane has withstood many knocks/bumbs

From a wider angle – you can see that the penetrations points remained well sealed:

What we can see is that if applied properly – as in no spots have been missed, then we are very confident that the seal will maintain its integrity well into the future.

Any signs that the ceramic coating would fail to provide an effective barrier would have been clearly visible after nearly a year of exposure to AN 'prill' - whether it be direct contact & through vapour exposure.

* Close up internal purlin penetrations - heavily sealed

* Flexible coating undamaged - despite major knock

* Wider angle internal coating - no visible corrosion

* Internal roof coating - no visible signs of corrosion

* Internal coating shed 1 (west) wall - no visible corrosion

* Internal coating shed 1 (east) wall - no visible corrosion

Despite a healthy covering of red dust, the sheds are showing no visible signs of corrosion despite heaped AN sitting in the troughs of corrugated sheeting – from delivery spillage.

The Drill & Blast rep. suggested that during the heavy rain in February, both the AN build up and majority of the dust easily washed away and that the sheds came up well.

*Shed 1 roof - no visible corrosion

*Shed 2 roof & front apren - no visible corrosion

IMPORTANT TO NOTE – consideration must be made for new/unsealed penetrations. Below you can see a recent installation of an 'eye wash station' has left unsealed penetrations exposed internally (which can easily touched up next inspection)

*Eye wash station - located in loading area

*Installation required in the ceramic 'seal' being broken

RIO TINTO - WEST ANGELAS

AMMONIUM NITRATE FACILITY - INSPECTION CHECKLIST

DATE: 11/04/2013

THERMOSHIELD
thermal insulation coating

SHED 1 - BAYS 1 & 2 EAST SHED	SIGNS OF CORROSION OR PRODUCT FAILURE	
	INTERIOR	EXTERIOR
Bay 1 - *Side wall (east facing)*		
Tech screw penetrations	—	—
H section framework	—	—
Purlins	—	—
Wall sheets	—	—
Bay 1 - *Roofing section*		
Tech screw penetrations	—	—
Interior framework	—	—
Roof sheets	—	—
Bay 1 - *Back wall (north facing)*		
Tech screw penetrations	—	—
H section framework	—	—
Purlins	—	—
Wall sheets	—	—
Bay 1 - *Front apren (south facing)*		
Tech screw penetrations	—	—
H section framework	—	—
Purlins	—	—
Wall sheets	—	—
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Interior framework	—	—
Roof sheets	—	—
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Tech screw penetrations	—	—
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Purlins	—	—
Wall sheets	—	—
Bay 2 - *Front apren (south facing)*		
Tech screw penetrations	—	—
H section framework	—	—
Purlins	—	—
Wall sheets	—	—

SHED 2 - BAYS 3 & 4 WEST SHED	SIGNS OF CORROSION OR PRODUCT FAILURE	
	INTERIOR	EXTERIOR
Bay 3 - *Side wall (east facing)*		
Tech screw penetrations	—	—
H section framework	—	—
Purlins	—	—
Wall sheets	—	—
Bay 3 - *Roofing section*		
Tech screw penetrations	—	—
Interior framework	—	—
Roof sheets	—	—
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Purlins	—	—
Wall sheets	—	—

IF ANY OF THE ABOVE BOXES ARE MARKED 'YES' (ticked) PLEASE ELABORATE:

Notes: Protective ceramic coating appearing to maintain its integrity & providing successful protection to corrosion.

THERMOSHIELD representitive:	CARSON BATTY	Signed:	Date: 11/04/13
RIO TINTO representitive:	M. L. LOGAIN	Signed:	Date: 11/04/13

18 MONTH INSPECTION OUTCOMES

On Thursday 20th November 2013, Carson Batty of Thermoshield visited the West Angelas ammonium nitrate storage facility – accompanied by two members of the Rio Tinto Explosives & Dangerous Goods team in Mark Comber & Tracy Arras.

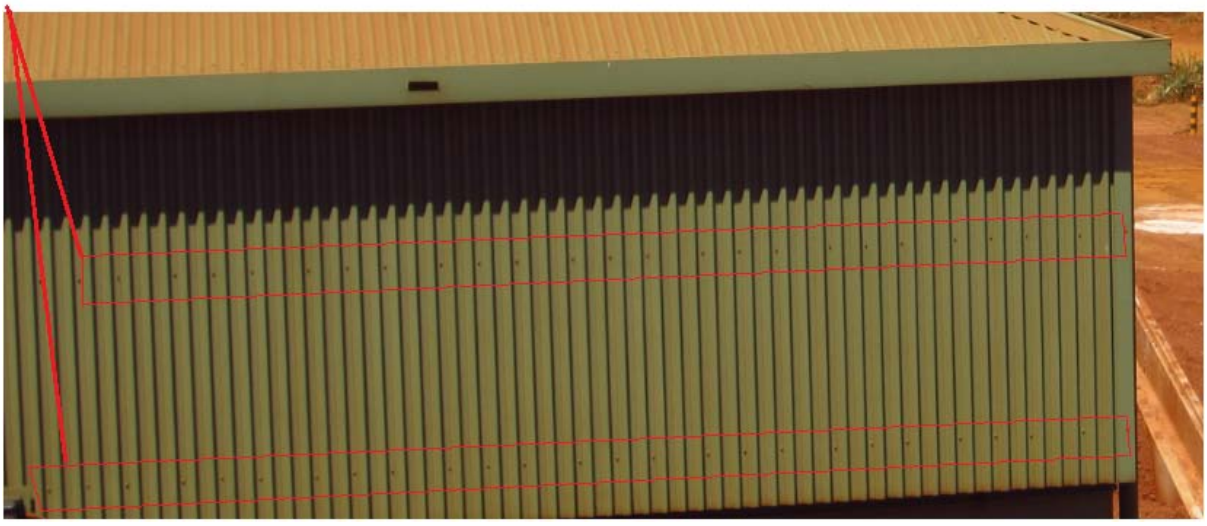
The two sheds had now been storing AN for up to 18 months.

The inspection was deemed a success by both Thermoshield & Rio Tinto management, with no signs of deterioration or product failure.

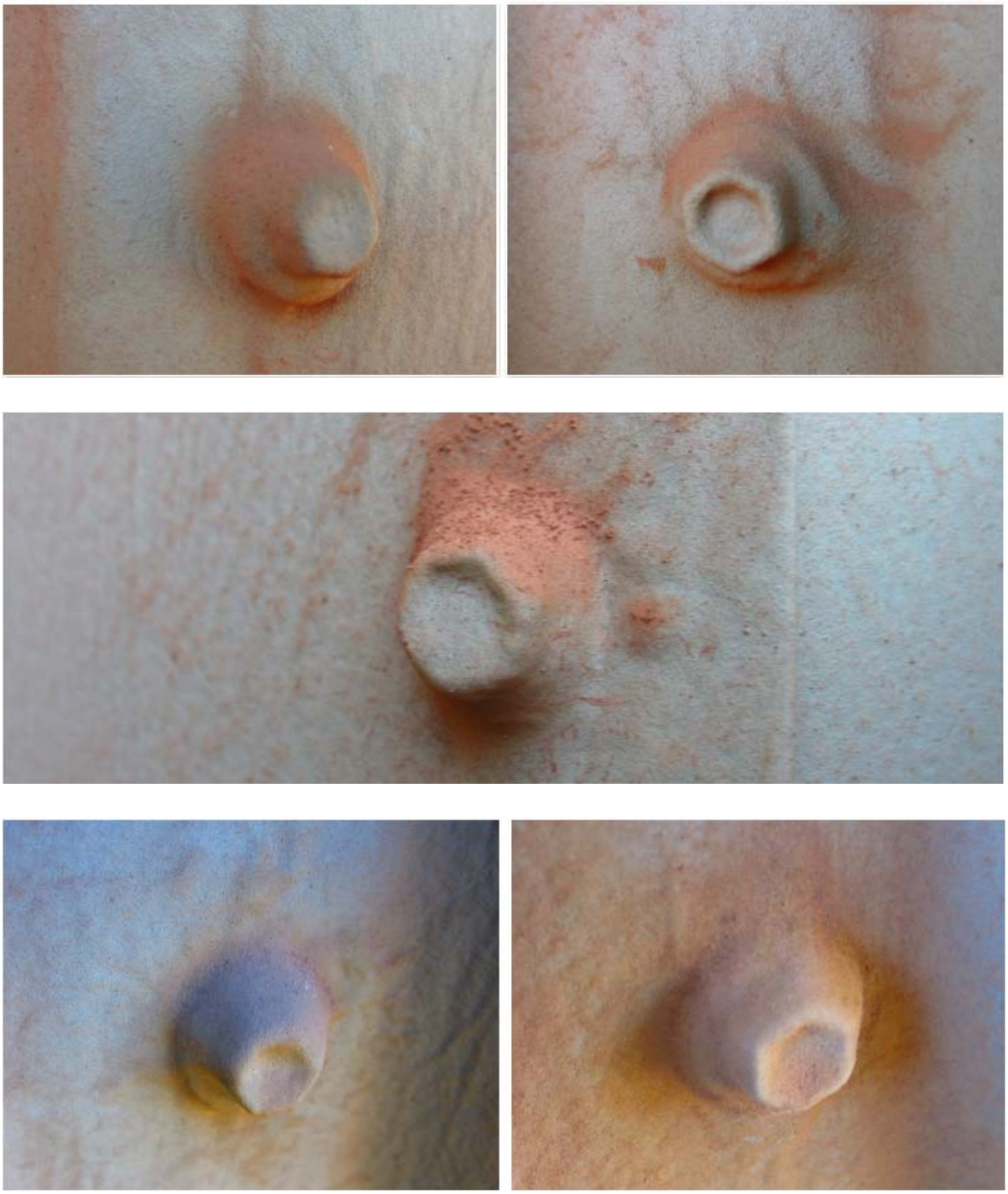
From here on in, I'll try to demonstrate the key areas for corrosion concern & how they remain well protected & sealed beneath the Thermoshield ceramic coating.

You can see from the below photos that the tech screw 'line' shows no signs of corrosion:

From the reverse/back of the shed 2:



Looking further into the comprehensiveness of the tech screw seals, below are a series of close up photos, demonstrating how the AN contact & vapour hasn't been able to gain access to any metal:



You can see from the above close ups, despite a healthy covering of Pilbara red dust, the coating is showing no signs of deterioration and the metal remains unexposed to oxygen, water & AN exposure.

If we remove these elements, we eliminate the possibility for corrosion.

Following on from the external examples – below is a wider angle view of the sheds internally, followed by some close up examples of how the 'seal' has been maintained:

Shed 1:

Shed 2:

Some close up examples of the reverse side, of tech screw penetrations – which provides the entry point for corrosion to begin from:

The below photo's show the roof exterior – which shows no sign of corrosion.

In addition, there is still no signs of AN bonding to the coating whereas on an unprotected roof sheet, we saw heaped AN almost 'crystallise' and bond to the sheet ruts.

Below is a wide angle – showing no damage to tech screw penetrations:

RIO TINTO - WEST ANGELAS

AMMONIUM NITRATE FACILITY - INSPECTION CHECKLIST

DATE: 20th NOVEMBER 2013

THERMOSHIELD
thermal insulation coating

SHED 1 - BAYS 1 & 2 EAST SHED	SIGNS OF CORROSION OR PRODUCT FAILURE	
	INTERIOR	EXTERIOR
Bay 1 - *Side wall (east facing)*		
Tech screw penetrations	–	–
H section framework	–	–
Purlins	–	–
Wall sheets	–	–
Bay 1 - *Roofing section*		
Tech screw penetrations	–	–
Interior framework	–	–
Roof sheets	–	–
Bay 1 - *Back wall (north facing)*		
Tech screw penetrations	–	–
H section framework	–	–
Purlins	–	–
Wall sheets	–	–
Bay 1 - *Front apren (south facing)*		
Tech screw penetrations	–	–
H section framework	–	–
Purlins	–	–
Wall sheets	–	–
Bay 2 - *Side wall (west facing)*		
Tech screw penetrations	–	–
H section framework	–	–
Purlins	–	–
Wall sheets	–	–
Bay 2 - *Roofing section*		
Tech screw penetrations	–	–
Interior framework	–	–
Roof sheets	–	–
Bay 2 - *Back wall (north facing)*		
Tech screw penetrations	–	–
H section framework	–	–
Purlins	–	–
Wall sheets	–	–
Bay 2 - *Front apren (south facing)*		
Tech screw penetrations	–	–
H section framework	–	–
Purlins	–	–
Wall sheets	–	–

SHED 2 - BAYS 3 & 4 WEST SHED	SIGNS OF CORROSION OR PRODUCT FAILURE	
	INTERIOR	EXTERIOR
Bay 3 - *Side wall (east facing)*		
Tech screw penetrations	–	–
H section framework	–	–
Purlins	–	–
Wall sheets	–	–
Bay 3 - *Roofing section*		
Tech screw penetrations	–	–
Interior framework	–	–
Roof sheets	–	–
Bay 3 - *Back wall (north facing)*		
Tech screw penetrations	–	–
H section framework	–	–
Purlins	–	–
Wall sheets	–	–
Bay 3 - *Front apren (south facing)*		
Tech screw penetrations	–	–
H section framework	–	–
Purlins	–	–
Wall sheets	–	–
Bay 4 - *Side wall (west facing)*		
Tech screw penetrations	–	–
H section framework	–	–
Purlins	–	–
Wall sheets	–	–
Bay 4 - *Roofing section*		
Tech screw penetrations	–	–
Interior framework	–	–
Roof sheets	–	–
Bay 4 - *Back wall (north facing)*		
Tech screw penetrations	–	–
H section framework	–	–
Purlins	–	–
Wall sheets	–	–
Bay 4 - *Front apren (south facing)*		
Tech screw penetrations	–	–
H section framework	–	–
Purlins	–	–
Wall sheets	–	–

IF ANY OF THE ABOVE BOXES ARE MARKED 'YES' (ticked) PLEASE ELABORATE:

Notes: All steel coated has continued to remain unaffected by AN exposure & the Thermoshield ceramic seal has been maintained. Some minor knocks from a loader have caused spots for touch up - but no signs of product failure.

THERMOSHIELD representitive:	CARSON BATTY	Signed:	Date: 20 / 11 / 13
RIO TINTO representitive:	MARK COMBER	Signed:	Date: 20 / 11 / 13