



PR POLYMERS

APPLICATION OF KOOLKAP DOWN-UNDER BAG

STANDARD WORK PRACTICE

Revision	Author	Approved	Date	Comments
Rev 0	Md Al Amin	David Seychell	21/01/2020	Initial release

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1 Summary

To provide a Standard Work Practice (SWP) to be followed in order to enable effective deployment and handling of KOOLKAP DOWN-UNDER Bags.

2 Scope

This Standard Work Practice applies to all workers involved with the use and handling of KOOLKAP DOWN-UNDER Bags.

Note: The work procedures stated in this Standard Work Practice must be followed unless doing so places people, property or the environment at an unacceptable risk. In such case work must stop immediately until the issue has been rectified and risks controlled to an acceptable level under the Shotfirers direction.

3 Requirements

3.1 Prerequisite

To be able to conduct the required tasks documented in this procedure the operators must have the following prerequisites prior to conducting the tasks:

- Complete Job Hazard Analysis (JHA)
- Read Product SDS
- Company Contractor and or Visitor Site Inductions, as required
- SSAN Clearance or equivalent in state that the site project is operating in
- Handling Explosives training competencies or Coal Industry Training Standards and or equivalent training needs
- Employee Site Induction, Standard 11, RPL and or RCC qualifications
- Drug and Alcohol clearance testing
- Any other site-specific training and competencies.

3.2 Personal Protective Equipment and Special Equipment

The following equipment is required to perform the documented tasks as defined in the procedure:

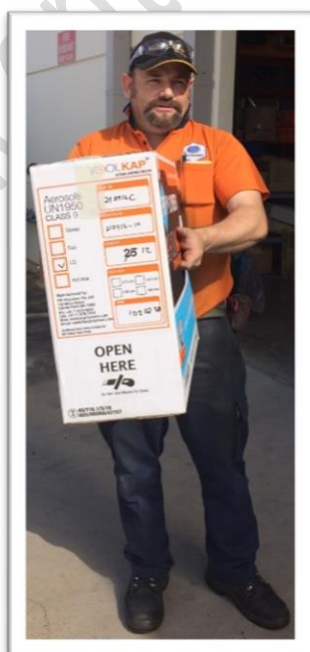
- Mine site PPE (Long pants, long shirt with reflective tapes (min), steel capped lace boots, Safety glasses, head protection)
- Appropriate Gloves
- Hearing protection, as required
- Dust mask, as required
- Sufficient water
- Sun protection (hard hat brim and sunscreen)
- Measuring rope/tape with weight on end
- KoolKap Mirrors
- Hard Copy reporting templates (suit site specific)

3.3 References and supporting documents

Details	References
All relevant site procedures	
Australian code for the transport of explosives by road and rail – Third Edition (2009)	
Australian Dangerous Goods Code (ADGC 7.3)	
Australian Explosive Industry and Safety Group (AEISG) Codes of Practice	https://www.aeiscg.org.au/wp-content/uploads/STORAGE-AND-HANDLING-OF-UN3375-COP-EDITION-4-MAY-2017-1.pdf
Explosive Storage and Use; Use of Explosives	AS2187.2 (2006)
Explosive Storage, Transport and Use	AS2187.1 (1998)
Suppliers Product Safety Data Sheet	https://prpolymers.com/wp-content/uploads/2017/04/KOOLKAP-DOWN-UNDER-DG-2.1.pdf
Ozone Protection and Synthetic Greenhouse Gas Management Act 1989	https://www.legislation.gov.au/Series/C2004A03755
Waste Reduction and Recycling Act 2011	https://www.legislation.qld.gov.au/view/html/inforce/current/act-2011-031

3.4 Application of Selected KOOLKAP DOWN-UNDER BAG

- Select correct size KoolKap® Down-Under Bag for appropriate hole and remove from carton just prior to use. PR Polymers recommend that you take the KoolKap® Down-Under Bag box out of the insulated storage compartment. Use the holes that are perforated on the sides of the box, this will help to carry the box of KoolKap® Down-under Bags around the bench with ease.



- It is recommended to remove the KoolKap® Down-under Bag from the box and place it directly down the hole (DTH) to reduce the exposures in instances of excessive cold or hot temperatures.



- KoolKap® Down-Under Bags must be handled with the same care as you would Detonators.
- We “DO NOT WANT A MISFIRE” therefore, we would advise that care be taken when placing Down-Under Bags at the collars of Blast Holes (Not Thrown). KoolKap® Down-under Bags are robust but must always be handled with care.



- The KoolKap® Down-Under patented system contains a water-based phase that is sensitive at very low temperatures.
- If you need to place the bag on the ground near the bore hole please place the KoolKap® Down-Under can facing the dirt (This action can reduce the temperature of the CAN by 10°C).

- In cold weather (early winter mornings) place the bag by the collar and allow it to warm to ambient temperature to reduce grip time.
- Leaving the KoolKap® Down-Under Bag next to the bore hole for prolonged periods of time before inflating in hot weather is not recommended. Understanding KoolKap® Down-Under bags are tested to 65°C (15 degrees above the required standard) with a 20% margin of safety summer ground temperatures will far exceed these high temperatures.

3.4.1 Activating KoolKap® Down-Under Bag V2's

- The KoolKap® Down-Under Bag is inflated by holding the bag in your non-dominant hand.



Locate the actuator by squeezing through the viewing window

Once located place thumb on top and push down when ready to inflate



- With your dominant hand depress the actuator by placing your thumb on the actuator and pushing towards the base of the can, (supporting the bag your left hand) until the actuator engages and the bag begins to inflate.



3.4.2 Activating KoolKap® Down-Under Bag V4's

- Figure 1/2: Demonstrating actuators outside of the bag.



Figure 3/4/5:

- Locate the actuator through the viewing window.
- The actuator has a larger lever surface area making it easy to activate.
- Locate your thumb on the face of the lever and push the lever towards the back of the bag until actuator engages (clicking sound) and the bag begins to inflate.



- The standard KoolKap® Down-Under Bag at 25°C will take approx. 55 seconds to grip in the bore hole. After 2 minutes in the hole, the bag should be fully sealed. After 3 minutes, you can begin loading.
- Duo bags can be activated using either actuator to decrease or increase the grip time pending what actuator you press. Pressing both actuators in 25°C together will give you a grip time of approx. 22 seconds. After 2 minutes in the hole, the bag should be fully sealed. After 3 minutes, you can begin loading. Allow up to 8 minutes in winter

and cooler times. Pressing the top actuator only will give you the same timing as a Classic Bag.

- LQ KoolKap® Down-Under Bags can be made to any customised grip time or load time pending your site requirements. A standard LQ Bag in 25°C will give you similar timings to a DUO bag. After 2 minutes in the hole, the bag should be fully sealed. After 3 minutes, you can begin loading.
- Combo bags can be manufactured with limitations of hole size between only 2 sizes and are specially formulated. This should be identified prior to purchasing your specific size bag.
- Test for full inflation by dropping cuttings down the hole and listen for the sound of thud/ping &/or use of KoolKap® Mirror.
- Once the KoolKap® Down-Under Bag has been activated it is recommended to keep the bag in a vertical position and place in the bore hole as quickly as possible, allowing more time to position the bag at the correct depth.



- The KoolKap® Down-Under Bags are made to suit the diameter drilled, it is not recommended to use it for another diameter as this could cause undue pressures on the bags causing them to fail, you must review combo bags. If in doubt give your PR Polymers Representative a call or dial 1800KoolKap (1800 566552) within Australia. Some drill bits are oversized, check OD with a bit ring before installing.
- Prepare the drop cord allowing an extra 1.5m to prevent RSI from continued bending. If you need to get the bag to a certain depth, then lower the bag with a dipping tape (Kinglon tape recommended) is the best method. Attach the bag to the tape and lower down the hole to the desired depth.

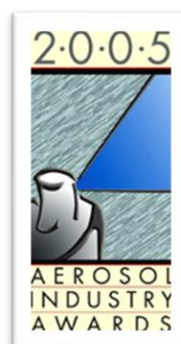


- Once the bag has gripped a firm upward pull on the drop line will break the woven bag tag from the top of the Bag when in position allowing the drop cord and the Kinglon dipping tape to be retrieved.
- If the KoolKap® bag needs to be removed from the blast hole, lance the bag to deflate then retrieve the bag with the drop cord.
- Should you experience a fault with any KoolKap® Down-Under Bags, we ask that you **“please retain”** the bag and contact your PR Polymers representative. This bag will be investigated for fault and a Non-Conformance report (NCR) will be completed and submitted for your records, with preventative measures and actions put in place as the control.

3.5 Hazards/Problems and Controls

- Please read KoolKap® DOWN-UNDER Bag Product Datasheet (KOOLKAP DOWN-UNDER (DG 2.1)) for understanding the associated risks and recommendations to avoid any risks.

- When PR Polymers developed the KoolKap® Down-Under and Top-Hole bags we wanted a product that would be safe for the user and the environment appreciating all elements of exposure.
- KoolKap® Down-Under and Top-hole Bags have been awarded by The Aerosol Association of Australia and New Zealand, the 2005 “Award for Environmental Achievement and Sustainability” with the current patent still recognised and in service today.



- KoolKap® Down-Under/Top-hole bags have a real environmental and safety advantage over alternative technologies which use synthetic greenhouse propellants.
- KoolKap® Down-Under/Top-hole bags have a Global Warming Potential (GWP) of 1 compared to greenhouse propellants like R134a based brews having a GWP of 1430.
- Each KoolKap® Down-Under/Top-hole bags are weighed to ensure there is the perfect measure of propellant inside to inflate the bag to its nominal pressure.
- Visual Inspections are carried out of the plastic inner bags to make sure there are absolutely no defects in the plastic or the seals.
- Actuators are factory tested to make sure there are no obstructions in the valve or actuator after the CANS are packed. Heat tests are also conducted after injection moulding of the actuator caps at 70°C making sure there are no workable defects in extreme heat before allocating to production.
- The heat seals on and the plastic are tested to destruction ensuring all on site sealing machines have no performance or operating problems prior to manufacturing each day.
- Inflation testing is completed onsite using dedicated bore hole diameter cylinders to check pressure ratings of an inflated bag DTH with calibrated instruments for pressure consistency before moving toward the billet load procedure.



- KoolKap® Down-Under/Top-hole bags are tested under extreme load conditions to simulate the diameter and friction of a typical bore hole using a reinforced concrete tube.

PR POLYMERS LOADED 1760 Kg's OF SOLID STEEL BILLETS OVER 14 DAYS ONTO AN EXTRA HEAVY-DUTY BAG TO ENSURE WHETHER LOADING PRODUCT OR STEMMING MATERIAL OUR "KOOLKAP DOWN-UNDER BAG" WON'T LET YOU DOWN.



- Selected finished KoolKap® Down-Under/Top-hole bags are tested at 65°C (149°F) for approximately 24 hrs in ovens on site to ensure users won't have any issues on the bench.
- Through each individual pallet manufacture, retention samples are made and kept as well sacrificial samples made and tested through the pallet build. Further to this, plastic seal retention samples are also kept for seal testing and compliance. All correlating batch numbers are used in support of that pallet build if required for compliance.
- A Master Batch Number is assigned to each single CAN to increase traceability back to a bag / pallet.
- Recording of the batch numbers identifies all the raw materials used in the manufacture of each pallet as well retained retention samples from each batch for compliance.
- KoolKap® Down-Under/Top-hole bags pass through rigorous factory procedures to ensure zero failures, making KoolKap bags the preferred choice for both the operator and our environment as a low risk solution when air decking.

3.6 Handling and Storage

- Before use carefully read the product label. Use of safe work practices are recommended to avoid eye or skin contact and inhalation. Observe good personal hygiene, including washing hands before eating. Prohibit eating, drinking and smoking in contaminated areas.
- Store as per AS2278-2008 and Australian dangerous goods code. Store in a cool, dry, well ventilated area, removed from incompatible substances, heat or ignition sources and foodstuffs. Ensure containers are adequately labelled, protected from physical damage and sealed when not in use. Store below 65°C (149°F). Recommended shelf-life: 12 months.

3.7 End of Shift Reconciliation

- Inspect area for missed holes and check that all holes planned as being available to deck for the shift are complete.
- Check actual decking against planned decking.
- Reconcile stock. Confirm on hand starting quantities match up with used & remaining quantities.
- Place & secure all items in designated areas.
- Carry out final checks of area and equipment.
- Signoff the work conducted.

4 Communication and Training

All mine workers are required to work under this safe work procedure will ensure that they have read and fully understand the requirements of the SWP before proceeding.

5 Record Management & Retention

- Documents that are the primary means of determining the competence of a person to undertake a task or role must be kept for five years. Original records of training, formative, summative and/or barrier/challenge assessments that are used to prove competence must be retained. Where formal qualifications are required as part of a

person's competence to operate in a role, a duly annotated true copy of the qualification must be retained.

- All original hard copy documents should be archived.
- Where an auditor or other legally entitled entity requires access to original paper documents they can be retrieved from the relevant archive.

6 Measure, Monitor and Review

Audit/ Review Criteria

This standard shall be reviewed as follows:

- Every five years as per Mine requirements; or
- When there is a change of method and/or technology that may affect the accuracy of this document; or
- When there has been a significant event to which this document was relevant; or
- As a result of a non-conformance resulting from audit findings.

Measuring and Monitoring

The application of this standard shall be measured by the following performance indicator.

- Effectiveness in the mine site

7 Responsibilities

Position	Obligation
SSE	<ul style="list-style-type: none"> • Ensure that adequate resources are made available to ensure that this SWP is developed and effectively implemented.
COO (PR Polymers)	<ul style="list-style-type: none"> • Directing the implementation and application of this Standard by all operating sites and 'in-spirit' adoption by all non-managed contractor sites.
Supervisor	<ul style="list-style-type: none"> • Management of people and resources to allow each person to comply with their responsibilities under this Standard Work Practice.
Statutory Role (Shotfirer)	<ul style="list-style-type: none"> • Where legislation provides for a statutory role that is responsible for the training and competency of people on the site, that person discharges their statutory obligations.
Relevant Manager	<ul style="list-style-type: none"> • Ensure that the technical content of this SWP is accurate in accordance with site and legislative requirements. • Ensure compliance to the SWP in their area of responsibility.
HST Manager	<ul style="list-style-type: none"> • Ensure that the SWP is developed in accordance with site document control processes and legislative requirements. • Ensure that audits and reviews are conducted for this SWP within the stipulated timeframes.
Site Safety and Training Manager	<ul style="list-style-type: none"> • Coordination and implementation of processes to ensure this standard is implemented.

All relevant mine workers	<ul style="list-style-type: none"> Ensure that they understand and comply with this SWP as it applies to their work.
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8 Abbreviations and Definitions

Terms	Meanings
Job Hazard Analysis (JHA)	A process applied to identify, evaluate and control hazards at task/activity level. May be applied as a Pre-Job Assessment and is useful for formulating written Standard Work Instruction for frequently conducted tasks. They are developed using the approved Mine JHA template.
Shall / Must /Will	Indicates a requirement is mandatory and has to be adhered, followed and complied to at all times.
Should	Indicates a recommendation.
Standard Work Practice (SWP)	A SWP is a work method statement which describes in a logical sequence, how something is done. It is work specific and is based upon a Job Hazard Analysis (JHA). They are developed using the approved Mine SWP template.
Assessment	<p>Assessment describes the processes used to define competence. There are various levels and types of assessment. The key ones are:</p> <p>Formative Assessment – Assessing a person’s ability to competently perform a task that is only part of a higher-level requirement (e.g. conduct a pre-start check). It is designed to provide learners with feedback on progress and informs development.</p> <p>Summative Assessment – Assessing a person’s ability to competently perform all of the tasks within the workplace environment required to complete a higher-level requirement (e.g. Support Shotfiring). It provides a measure of achievement or failure made in respect of a learner’s performance in relation to the intended learning outcomes of the program of study</p> <p>Barrier / Challenge Assessment - Assessing the veracity of a person’s claimed prior learning or current competency by random selection and assessment of key tasks related to the claimed competence.</p> <p>Performance Assessment – Assessing a person’s behavioural competence (a person is applying appropriate attributes and attitude to use their knowledge and skills to meet key performance indicators).</p> <p>Assessments may take the form of written, oral, practical and simulated tests. Any assessment must be holistic in determining competence against performance criteria and require display of any underpinning knowledge requirements.</p>
Competent	<p>“A person has the knowledge, skills, attributes and attitude to safely and effectively carry out the tasks they are required to perform”</p> <p>Where, the legislation describes competent it must be read in conjunction with this definition. Where there is any inconsistency the legislation takes precedence.</p>

Terms	Meanings
Competency	The term competency in this Standard refers to the word in specific and generic terms. The specific term refers to a Unit of Competency that is recognised as a component part of an industry-determined specification of performance contained in training packages administered by DEST. In the generic sense, the term refers to the ability of people to demonstrate that they are competent.
Qualifications	Qualification refers to all formally awarded documents that infer the attainment of a level of proficiency and competence. This includes all educational documents awarded under the Australian Qualification Framework, Trade Certificates and Federal, State and Local Authority Licenses. Qualifications can also be allocated specific to business needs of an Open Cut Mine. Qualifications are usually awarded with the successful completion of a related curriculum of study or curricula.
KoolKap BAG	A bag that is inflated with an aerosol charge that is positioned within a blasthole and when fully charged acts as a blasthole blocker or decking device.
Booster	A cap sensitive explosive with a high VOD
VOD	Velocity of detonation is: <ul style="list-style-type: none"> • Rate of the detonation wave as it travels through explosive product • Measured as M/sec
Detonator	Any device (nonel or electronic) containing a detonating charge that is used to initiate an explosive.
Dewatered Blasthole	A blasthole that has had water removed using an in-hole pump.
RSI	Repetitive Strain Injury
R134a	<p>1,1,1,2 Tetrafluoroethane (HFC134a).</p> <p>This product is not suitable for disposal by either landfill or via municipal sewers, drains, natural streams or rivers. This product should be treated and disposed through chemical waste treatment in accordance with the local authority or considered for use in recycling.</p> <p>Fluorohydrocarbons can result in adverse respiratory symptoms, and in a pressurised environment, could contribute to pulmonary oedema.</p> <p>Please read carefully SDS of R134a if you use R134a based products on site.</p>

9 Appendices

- Appendix 1 – SWP Signoff

Appendix 1: SWP Signoff:

Personnel involved in '**APPLICATION OF KOOLKAP DOWN-UNDER BAG (Version PRP-SWP-02)**' must read and sign on below to verify they fully understand the hazards associated with the task and how to control the risks.

Name	Signature	Date

The supervisor/s must sign on below to verify that the persons above have been taken through the applicable SWP.

Supervisor	Signature	Date

Supervisor must ensure that the original of this signed document is forwarded to the PR Polymer COO and the Mine HST Department for processing and data entry.