

SAFETY ALERT

Synthetic fibre sling fails

INCIDENT

A crane was lifting a leg assembly into position on a skyline conveyor. One of the synthetic fibre slings that were attached to the leg assembly failed. This allowed the leg assembly to move and come into contact with a boom-type elevated work platform (EWP).

The EWP had two workers on board. The workers in the EWP anchored their harnesses to the conveyor walkway and exited via that walkway.

The incident occurred at a mine near Lithgow on 4 April 2017.

Figure 1: Leg assembly resting on elevated work platform



CIRCUMSTANCES

The mine operator had identified that several sets of the conveyor's legs were deformed by both the weight of coal on the legs and the passing of stockpile dozers on the coal. The legs still had sufficient structural integrity for the required load but it was decided to replace them.

New legs were designed and a change-out method using cranes was developed. A 220 tonne crane was used to support the skyline conveyor during the change out process. A 110 tonne crane was used to remove the existing leg assembly and to install the new assembly. The legs were attached to the crane using synthetic fibre slings in a choked hitch under a bolted flange. The leg assembly was lifted from a horizontal position and was nearly in the final vertical position when the sling failed.

The EWP was positioned adjacent to the top of the leg assembly. This provided final guidance for positioning and then to bolt the leg assembly into position. Two men were in the basket.

Figure 2: The failed sling



INVESTIGATION

It appears that the slings had worn on the sharp edges of the flange and the bolts. The remaining sling, when removed, also had some cuts and abrasions through the outer casing and into the core.

The lifting plan for the task included both cranes on the one plan, even though they were independent lifts. The pro-forma for the lifting plan did not give guidance on sling selection nor did it provide adequate space to specify all the lifting equipment selections.

Based on the positioning of the EWP with respect to the load, it was reasonably foreseeable that if a sling was to fail during the lift, the EWP could have been struck by the load.

RECOMMENDATIONS

When lifting any load using synthetic or soft slings, ensure that:

- there is no potential for the sling to be damaged during the lift, such as by sharp edges, squashing or other methods*
- slings are inspected by a competent person for damage before each lift
- where possible, loads should be lifted with designated lift points. This should be considered during the fabrication of equipment.
- riggers and doggers who sling the load are competent and licensed for the lift
- where the load has sharp edges or components are attached to it (for example, cleats), chain or wire rope slings are used. Synthetic slings must not be used unless they are protected from these sharp edges.
- lift plans for crane operations contain information, including working load limit, for all items to be used for the lift
- sling selection considers the potential for damage to the sling from the load
- all 'drop' or 'fall' zones are clear and secured.

Note: Several other government agencies have published safety alerts regarding the use of synthetic fibre slings. These alerts have discussed slings' susceptibility to damage and cuts if exposed to sharp edges without protection. They contain the same advice:

- synthetic fibre slings should **not** be used where the load has sharp edges
- protection of paint or surface finishes should **not** be a factor in sling selection. This can be achieved by other methods.

The alerts can be accessed here:

- WorkSafe Tasmania
 - [worksafe.tas.gov.au/__data/assets/pdf_file/0009/348984/Soft_Sling_Failure.pdf](https://www.worksafe.tas.gov.au/__data/assets/pdf_file/0009/348984/Soft_Sling_Failure.pdf)
- WorkSafe Victoria
 - [worksafe.vic.gov.au/__data/assets/pdf_file/0012/3540/Soft-sling-fails-during-lift_Alert_vs3.pdf](https://www.worksafe.vic.gov.au/__data/assets/pdf_file/0012/3540/Soft-sling-fails-during-lift_Alert_vs3.pdf)
- SafeWork SA
 - [safework.sa.gov.au/uploaded_files/ha_failure_of_synthetic_fibre_slings.pdf](https://www.safework.sa.gov.au/uploaded_files/ha_failure_of_synthetic_fibre_slings.pdf)

*Note: Common soft sling failure includes sharp edges on loads cutting slings, slings being cut when coming into contact with obstructions while under load, mechanical damage from exposure to chemicals or UV light, dirt or grit in the fibres, or poor storage or handling practices and working load limit being exceeded.

NOTE: Please ensure all relevant people in your organisation receive a copy of this Safety Alert, and are informed of its content and recommendations. This Safety Alert should be processed in a systematic manner through the mine's information and communication process. It should also be placed on the mine's notice board.

Issued by

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Chief Inspector of Mines

Appointed pursuant to Work Health & Safety (Mines and Petroleum Sites) Act 2013

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