

Safety Alert – Cylinders manufactured from aluminium alloys HE30/AA6082 and AA6351 and used primarily for gases for underwater breathing apparatus

Health and Safety Executive – Safety Alert

Department Name: Energy Division

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Target Audience: SCUBA diving, those that supply breathing air through an umbilical hose and those used to fill SCUBA cylinders.

Key Issues: Cylinders to be inspected and tested include those used for SCUBA diving, those that supply breathing air through an umbilical hose and those used to fill SCUBA cylinders.

There have been several recent catastrophic failures of aluminium cylinders used primarily to contain gases for underwater breathing apparatus and manufactured from aluminium alloys HE30/AA6082 and AA6351. These cylinders should only be used if they have undergone thorough visual inspection and testing with an eddy-current device by a competent inspector (see inspection and testing requirements below).

Failure to conduct such inspection and testing could result in serious harm.

Cylinders to be inspected and tested include those used for SCUBA diving, those that supply breathing air through an umbilical hose and those used to fill SCUBA cylinders.

If you are unable to determine whether a particular cylinder is made from one of these alloys, remove it from service, safely release the gas and do not use it until the alloy can be identified and proper inspection and testing can be conducted.

- Cylinders that cannot be identified from markings on the cylinder must be removed from service, condemned and rendered incapable of holding pressure.
- Cylinders that fail visual inspection or eddy-current testing must be condemned and rendered incapable of holding pressure.

Background

Serious harm was caused by failure of an HE30/AA6082 cylinder in England in 2017, which followed similarly harmful failures of AA6351 SCUBA cylinders in Indonesia and Australia in 2016. Cylinders manufactured from these alloys are known to be susceptible to sustained-load cracking (SLC). These cylinders were manufactured by several companies in several countries between 1963 and 1995. Thus, any cylinders still in use are between 23 and 55 years old.

Luxfer Gas Cylinders manufactured HE30/AA6082 and AA6351 cylinders in England and AA6351 cylinders in the USA and Australia. Walter Kidde Company in the USA, CIG Gas Cylinders in Australia (acquired by Luxfer Gas Cylinders in 1997) and Reynolds Tube Company Ltd (later known as TI Hollow Extrusions) in England also manufactured cylinders from these alloys.

Inspection and testing requirements for cylinders manufactured from HE30/AA6082 and AA6351 and used primarily for underwater breathing apparatus

Cylinders used at work or filled by a person at work—including SCUBA cylinders, cylinders that supply breathing air through an umbilical hose and cylinders used primarily to fill SCUBA cylinders—must be suitably inspected and tested to ensure that they are safe. Inspection frequency must be in line with requirements of BS EN 1802 for “Gases for underwater breathing apparatus”. It is also recommended that cylinders not used or filled at work be subject to similar inspections and tests.

An eddy-current test must be conducted in addition to the required visual inspection. This test shall be conducted by a competent and qualified cylinder inspector who has been trained in the specific use of eddy-current testing equipment.

If a cylinder is equipped with a thread adaptor, the adaptor must be removed prior to visual inspection and eddy-current testing.

It should be noted that Luxfer Gas Cylinders currently only approves two eddy-current devices for such testing: Visual Plus™ and Visual Eddy™.

The relevant standard describing inspection requirements for aluminium cylinders containing gases for underwater breathing apparatus is BS EN 1802 (due to be replaced by BS EN ISO 18119). This standard requires that inspection and testing be carried out by a competent person. Although there is no unique legal definition of competence for cylinder testing, HSE considers that the following provide a suitable level of confidence in a cylinder inspector’s competence for this task:

- Appointment by the Secretary of State for Transport for the purposes of inspection of gas cylinders
- Working within the terms of an industry-accredited scheme.

The appointment or accreditation should be for the specific type of cylinder concerned.

Actions required

Check to see if any of your cylinders are manufactured or suspected to be manufactured from aluminium alloys HE30/AA6082 or AA6351. Check for specific alloy-related markings or for a manufacture date (the earliest date stamped on the cylinder) prior to 1995. If you believe that a cylinder may be made from either of these alloys, then you should assess the risk of continued use by considering the cylinder’s age, history of use and previous testing.

If you cannot determine the alloy and appropriate information as described in BS EN 1802–e.g., if you cannot easily read markings on the cylinder or if markings are missing—you must remove the cylinder from service, safely release the gas and render the cylinder incapable of holding pressure.

If you are unable to confirm that eddy-current testing was performed on an HE30/AA6082 or AA6351 cylinder, remove it from service, safely release the gas and do not use the cylinder until eddy-current testing can be performed.

Identifying cylinders manufactured from HE30/AA6082 and AA6351 aluminium alloys

Cylinders stamped with any of the following markings are manufactured from HE30/AA6082 or AA6351:

- HE30
- HOAL 1
- HOAL 2
- HOAL 3
- HOAL 4
- BS5045/3/B
- BS5045/3/B/S
- AA6351
- P****X (as part of serial number)
- P****P (as part of serial number)

Note: On some small cylinders manufactured at Luxfer's Aldridge, England, plant, the above markings may not be present. In that case, the alloy can be determined from the three-digit type number stamped around the base. If the three-digit number is of the form 1**, 3** or 5**, then the alloy of manufacture is AA6351.

Relevant legal documents

- Health and Safety at Work etc act 1974.
- Diving at Work Regulations 1997 (6)(3)(b).

Further information

General note

Please pass this information to any of your colleagues who may have this product or equipment or may operate this type of system or process.

All cylinders that are transported for the purpose of work must be tested at an approved [Vehicle Certification Agency \(VCA\)](#) test centre.

This alert sheet contains notes on good practice which are not compulsory but which you may find helpful in considering what you need to do.

Asbestos removal company and managers sentenced after forging documents

An asbestos removal company, and two of its managers, have today been prosecuted after forging documents in order to obtain an asbestos licence from the Health and Safety Executive (HSE).

Greater Manchester Magistrates' Court heard how, between 16 March 2012 and 10 March 2016, Excavation and Contracting (UK) Ltd used both forged medical certificates and forged asbestos training certificates for their asbestos removal operatives. These forged documents had been made by their asbestos operations manager, David Lloyd, and included medicals in the name of the company operations manager, Lee Cooper, and forged training certificates for Lee Cooper and the managing director, Brendan O'Halloran. The doctor who had allegedly issued these medical certificates had retired sometime earlier to live outside the UK.

The HSE investigation found the defendants had used forged documents to obtain an asbestos licence from HSE in order to trade. The investigation also found the company could not show that they had properly trained or adequately monitored their workers who were exposed to asbestos.

David Lloyd, of Hanwell Close, Leigh pleaded guilty to breaching Regulations 10(1)(a) and 22(1)(c) of the Control of Asbestos Regulations 2012. He was sentenced to 12 weeks in prison suspended for two years and was ordered to carry out 200 hours of community service. He was also ordered to pay costs of £1,000.

Lee Cooper, of Shelley Close, Huyton, pleaded guilty to breaching Regulations 10(1)(a) and 22(1)(c) of the Control of Asbestos Regulations 2012 and was ordered to undertake 80 hours of community service and pay costs of £1,000.

Excavation and Contracting (UK) Ltd of West Quay Road, Warrington, pleaded guilty to breaching Regulations 10(1)(a) and 22(1)(c) of the Control of Asbestos Regulations 2012 and was fined £13,000 and ordered to pay costs of £10,000.

HSE inspector Matt Greenly said after the case: "Putting people at risk from asbestos by not training them or monitoring their health, as required by law, not only puts their lives at risk from an incurable set of diseases, but is also wholly unnecessary.

"There are ample affordable training providers and approved doctors who can carry out these functions at the convenience of the contractor. Taking deliberate shortcuts by creating forged documents will not be tolerated by HSE and we will not hesitate to take appropriate enforcement action against those that fall below the required standards."

Notes to Editors:

1. The Health and Safety Executive (HSE) is Britain's national regulator for workplace health and safety. We prevent work-related death, injury and ill health through regulatory actions that range from influencing behaviours across whole industry sectors through to targeted interventions on individual businesses. These activities are supported by globally recognised scientific expertise. hse.gov.uk
 2. More about the legislation referred to in this case can be found at: legislation.gov.uk/
 3. HSE news releases are available at <http://press.hse.gov.uk>
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Surveyor fined after failing to detect asbestos

A specialist asbestos company has been fined after failing to detect asbestos at a demolition site.

Greater Manchester Magistrates' Court heard how EAS Asbestos Limited were commissioned to conduct refurbishment and demolition surveys by Mercer Brother Limited, a construction company who were contracted to demolish garages for Hyndburn Homes. EAS Asbestos stated in their surveys that asbestos was only present in the cement roof sheets, there were no areas that could not be accessed, and that there was no asbestos insulation board present in the garages.

On Wednesday 1 February 2017, the demolition of the garages went ahead but work was immediately stopped when suspect material was found. Another surveying company was brought in and confirmed the presence of large amounts of asbestos insulation board in the demolition rubble.

An investigation by the Health and Safety Executive (HSE) found that the survey carried out by EAS Asbestos Limited was incorrect and misleading.

EAS Asbestos Limited of Lower Meadow Lane, Huthwaite, Sutton in Ashfield, pleaded guilty to breaching Section 3 (1) of the Health and Safety at Work Act 1974. The company was fined £6,700 and ordered to pay costs of £1,000 and a victim surcharge of £170.

Speaking after the case, HSE inspector Jacqueline Western said "This incident could so easily have been avoided by simply carrying out correct control measures and safe working practices.

"Companies should be aware that HSE will not hesitate to take appropriate enforcement action against those that fall below the required standards".

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Journalists should approach HSE press office with any queries on regional press releases.

[Contractor fined after a series of failures to carry out work safely and provide adequate welfare facilities](#)

A contractor carrying out refurbishment and basement extension work was prosecuted after the Health and Safety Executive (HSE) identified a series of serious safety breaches during inspections.

Westminster Magistrates' Court heard that PVAD Limited was the contractor controlling work at a construction site at on Montholme Road, London, SW11, when it was inspected by the HSE in March 2017. The inspection found that numerous areas of the site had no edge protection to prevent falls, including where workers could fall four metres into the basement from the site entrance area. Unsafe 'homemade' ramps were being used to allow access to some parts of the site.

It was also found that the welfare facilities fell far below the legally required standard, with the WC having no cistern to allow flushing and the washing arrangements on site consisting of a cold water outdoor tap and bucket, with no soap or towel.

A prohibition notice was served on PVAD Limited, but further inspections in April and May 2017 found new work at height issues that were so serious that all work had to be halted on both occasions until the site was made safe. An improvement notice was also served requiring PVAD Limited concerning the inadequate welfare facilities. The company breached the notice as the improvements made were insufficient.

The HSE had previously inspected other PVAD Limited sites several times in

2015 and 2016. As a result, the company had been served with three improvement notices relating to welfare facilities and two formal letters highlighting work at height risks and giving advice.

PVAD Limited of Overstone Road, Hammersmith pleaded guilty to breaching Regulation 6(3) of the Work at Height Regulations 2005, Regulation 15(11) of the Construction (Design and Management) Regulations 2015 (CDM) and Section 33(1)(g) of the Health and Safety at Work etc Act 1974. The company was fined £51,334 and ordered to pay £1,525.50 in costs.

HSE inspector Adam Thompson commented after the hearing:

“After the March 2017 inspection PVAD Limited were provided with clear written advice to help them make improvements. They failed to take note of this and continued to rely on a site manager with no formal health and safety training.

“On the three occasions the site was visited the workers were at such risk of falling that all work had to halt. It was just good fortune that no one was killed or seriously injured at the site”.

“The standards were particularly inexcusable as the company had received clear warnings in the past. It speaks volumes that, even after being issued with three welfare improvement notices at other sites, they provided their workers at the new site with a non-flushing WC and an outside cold water tap and a bucket as washing facilities”.

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[Building contractor jailed after house collapse in Brighton](#)

A building contractor has been sentenced following an incident in February 2015 in which a house in Brighton partially collapsed.

Hove Crown Court heard how builder Glen Peters (trading as Brow Builders)

undermined the structural integrity of the house by digging out the basement. He then failed to act on the advice of a structural engineer on how to remedy the situation, resulting in the gable wall partially collapsing and the ground floor collapsing into the basement. Adjacent properties had to be evacuated and the area cordoned off because there were concerns that members of the public living nearby and passing through the area were at risk.

An investigation carried out by the Health and Safety Executive (HSE) found that the property had bungeroosh walls, common to buildings in the Brighton area which were built in the mid-18th to 19th century. They are constructed with a mixture of rubble, timber, pebbles, stones and flint in a lime mix mortar set between shuttering. The make-up of these walls makes working on this type of building more challenging in terms of structural stability, meaning that those doing so must fully understand what they are dealing with.

The investigation also found that Glen Peters failed to report the incident to HSE as a dangerous occurrence in accordance with the Reporting of Injuries, Diseases and Dangerous Occurrences Regulations (RIDDOR) 2013.

Glen Peters (trading as Brow Builders) of Woodingdean, Brighton, pleaded guilty to breaching Regulation 25(1) of the Construction (Design and Management) Regulations 2007 and Regulation 7 of the RIDDOR Regulations 2013. The defendant was sentenced to five months imprisonment for count one and two months imprisonment for count two to run concurrently. He was also ordered to pay costs of £7,000.

HSE principal inspector Emma Stiles said "Basement work must be properly planned to ensure the structural integrity of the building throughout the construction work. When this type of work is done badly, workers and members of public are at significant risk of serious injury or death. In addition, we cannot underestimate the impact on the homeowners when their properties are extensively damaged."

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