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Angle Grinder Chainsaw Discs and Attachments

OPSS Risk Summary

The products

OPSS has been made aware of certain businesses marketing chainsaw discs and chainsaw attachments for use with angle grinders. These discs and attachments are generally marketed as being suitable for wood, plastics and soft materials for applications including sculpture, carving and pruning.

Angle grinders are not designed for use with such discs and attachments, as these

tools lack the safety features required on electric chainsaws such as handle spacing, hand guards, chain catcher and chain brake and operate at significantly higher speeds than chain saws.

Angle grinders and chainsaws are regulated by the Supply of Machinery (Safety) Regulations 2008 and are covered by the following standards:

EN 60745-1 (*Hand-held motor-operated electric tools. Safety. General requirements*)

EN 60745-2-3 (*Particular requirements for grinders, polishers and disk-type sanders*)

EN 60745-2-13 (*Particular requirements for chain saws*)

The issues

There are several possible scenarios whereby angle grinders can cause injury: inadvertent contact with the moving disc, shattering / breakup of the disc, projectiles emitted from the workpiece, entanglement with moving parts and fire. These are generally well understood and mitigated by the correct use of the tool, selection of

appropriate discs, good working practices and use of personal protective equipment

(PPE).

Kickback has the potential to cause severe injuries and can occur when the disc or chainsaw attachment strikes an object or snags on the workpiece or when the material being cut ‘closes’ in the middle of a cut. This results in a sudden, often violent and unexpected upward motion towards the operator usually in the direction of the head and neck.

Chainsaws have several safety features in their design that are intended to protect against the risks presented by the chain.

Although angle grinders also have safety features, they are not designed nor are they intended to protect against the risks from derailed or snapped chains. The primary safety features are the guard around the disc and the side handle, the latter of which is intended to give the operator the opportunity to control the tool in the event of kickback. Although these features will provide some limited protection against hazards arising from a chain attachment (for example protecting from unintended contact with the rotating chain), there is no evidence that they would be effective at preventing severe injury that can occur when using a chainsaw disc or attachment where the risk of kickback is increased.

Additionally, angle grinders operate at significantly higher speeds than chainsaws (> 4x) and this potentially increases the risk because of the additional mechanical forces applied from the increased rotational speeds which may result in derailed or broken chains and break-up and makes kickback more likely.

The harm

Kickback events can cause severe lacerations and amputations with injuries resulting in disfigurement, disability and in some cases death. Injuries are most common to the head and face due to the tendency of the tool to move suddenly backwards from the workpiece towards the operator, although other areas of the body are also subject to injury due to the unpredictability and high speed of kickback events.

Risk assessment

OPSS uses the RAPEX methodology to determine the product hazard/s and the associated risk outcomes from those hazards. This risk summary focusses on the primary risk from the kickback hazard associated with fitting a chainsaw attachment to an angle grinder, and injury scenarios have been developed to reflect this.

The risk level

A legally safe angle grinder which is fitted with a chainsaw disc or chainsaw attachment presents a **serious risk of harm** in accordance with the RAPEX methodology. This is primarily because:

- The risk of the chainsaw attachment digging in and causing a kickback is increased based on the typical cutting motion used with these attachments,

particularly in wood sculpting
- The safety features on an angle grinder are unlikely to be effective in protecting the operator (and any bystanders) from contact with the chain in the event of kickback (especially if the chain were to derail or break)

The conclusion

Angle grinders involve a risk of injury despite being legally safe because they are a type of machine whereby the dangerous part must be presented to the workpiece, meaning that the dangerous part cannot be fully enclosed. However, the dangers are well known and well understood and are generally mitigated by correct and appropriate use of the machine, suitable design of the machine which guards the dangerous parts to the greatest extent practicable and by using appropriate PPE.

The use of a chainsaw disc accessory on an angle grinder increases the risks above those considered tolerable because:

1. Angle grinder safety features are not designed to safeguard against the increased risks associated with chainsaw attachments.
2. The versatility of these attachments may encourage operators to use angle grinders in ways not intended, such as making risky cuts into material rather than the traditional straight cuts made by angle grinders and chainsaws e.g., wood sculpting.

In summary, use of these chainsaw accessories poses an increased and intolerable risk both in terms of probability of injury and severity of injury resulting in a **serious risk** where major injuries could foreseeably occur to operators.