Joint Market Surveillance Action on Harmonised Products JAHARP2021-07

on Circular Saws

Layman's report

JAHARP MNIBUS 2021

PROSAFE Joint Actions Best Practice

Co-funded by the European Union

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List of abbreviations

ADCO	Administrative Cooperation Group
CEN	European Standardisation Committee
CENELEC	European Committee for Electrotechnical Standardisation
DG GROW	European Commission - Directorate-General for Internal Market, Industry, Entrepreneurship and SMEs
EEA	European Economic Area
EISMEA	European Innovation Council and SMEs Executive Agency
EN	Prefix of the reference of a European Standard
EU	European Union
GA	Grant Agreement
ICSMS	Information and Communication System for Market Surveillance
IEC	International Electrotechnical Commission
ISO	International Organization for Standardization
MSA	Market Surveillance Authority
OJEU	Official Journal of the European Union
RAG	Risk Assessment Guidelines

Glossary

CE MARKING: The CE marking means that the manufacturer takes responsibility and declares that a product sold in the European Economic Area (EEA) has been assessed to meet all applicable safety, health, performance, and environmental requirements.

CONFORMITY ASSESSMENT: a manufacturer can only place a product on the EU market when it meets all the applicable requirements. The conformity assessment procedure is carried out before the product can be sold.

CORRECTIVE ACTIONS: any actions taken by an economic operator to bring non-compliance to an end where required by a market surveillance authority or on the economic operator's own initiative.

DECLARATION OF CONFORMITY: at the end of the conformity assessment process, the manufacturer confirms compliance by drawing up an EC (now EU) Declaration of Conformity and affixing the CE marking on the product. The EC declaration of conformity is a mandatory document signed by the manufacturer of a product or by his authorised representative to declare that the product complies with all applicable safety, health, performance, and environmental requirements. The EC Declaration of Conformity must be issued before the product is placed on the market.

ECONOMIC OPERATOR: a manufacturer, authorised representative, importer, distributor, fulfilment service provider, or any other natural or legal person who is subject to obligations in relation to the manufacture of products, making them available on the market or putting them into service in accordance with the relevant Union legislation.

EC TYPE-EXAMINATION (now EU type-examination)**:** the procedure whereby a notified body ascertains and certifies that a representative model of a category of machinery referred to in Annex IV satisfies the provisions of Directive 2006/42/EC.

FULL QUALITY ASSURANCE: Annex X of the Machinery Directive 2006/42/EC describes the full quality assurance procedure, in which, rather than assessing an individual product, the notified body assesses the manufacturer's quality assurance system for the design, manufacture, final inspection and testing of one or more machinery categories listed in Annex IV.

HARMONISED STANDARD: a European standard developed by a recognised European Standardisation Organisation defining the technical specifications used to assess/verify that a product complies with the mandatory requirements. Application of harmonised standards is not mandatory but confers a presumption of conformity with the essential requirements it covers.

ICSMS: the Information and Communication System on Market Surveillance (ICSMS - webgate.ec.europa.eu/icsms/) is an IT platform set up and managed by the European Commission which enables the exchange of information between EU-27 market surveillance authorities on non-food product inspections and their results. ICSMS has an internal and a public area. Consumers can access ICSMS' public area to check whether a product model has been inspected and if it is compliant.

INSPECTION: a market surveillance activity aimed at verifying the compliance of products against the requirements defined in the legislation and standards.

MARKET SURVEILLANCE: the activities carried out and the measures taken by market surveillance authorities to ensure that products comply with the requirements set out in Union legislation.

MARKET SURVEILLANCE AUTHORITY: an authority designated by an EU Member State as responsible for carrying out market surveillance in the territory of that Member State.

MODEL: a version of a product of which all units share the same technical characteristics relevant for the conformity assessment, instructions and EC Declaration of conformity.

NOTIFIED BODY: an organisation designated by an EU country to assess the conformity of certain products before they are placed on the market. These bodies carry out tasks related to conformity assessment procedures set out in the applicable legislation, when a third party is required.

NON-COMPLIANCE / NON-CONFORMITY: any failure to comply with a requirement under the Union legislation.

RISK-BASED APPROACH/SAMPLING: the most common approach among market surveillance authorities, used to focus/optimise their limited resources on those products and models considered most likely to pose a risk of non-compliance.

SAFETY GATE: the EU rapid alert system for dangerous non-food products. The Safety Gate system enables that information on measures taken against non-food dangerous products is circulated quickly among the national authorities responsible for product safety in the Single Market countries.

SAMPLES: different units of the same model.

TECHNICAL FILE: documentation compiled by the manufacturer to demonstrate that the model complies with the applicable requirements. The Technical File must be made available to the market surveillance authorities upon request.

Executive summary

Scope and objectives of JAHARP2021-07

JAHARP2021-07 was a pan-European Joint Action focused on Circular Saws coordinated by PROSAFE, which started in August 2022 and ended in July 2024.

The action fell within the scope of the Machinery Directive 2006/42/EU[1] and aimed at verifying compliance of the products on the EU market with the Union legislation. In particular, the project centred upon **mini-handheld circular saws** and **transportable saws and saw benches**.

In total, the MSAs sampled **55 different models** and found a **high level of compliance** with the Machinery Directive, given that **only 20% of the tested circular saws presented technical non-conformities**.

On the other hand, only 5 of the instruction manuals verified by the participating authorities were complete, with **several of them missing crucial warnings and safety information for users**. In addition, **60% of the checked EC Declarations of Conformities were either incomplete or not provided** by the manufacturers.

It is important to point out that, even though the project observed a high level of compliance of the sampled circular saws, the risk of accidents associated with these products is still very relevant, and **training and education of users are necessary** in order to avoid them.

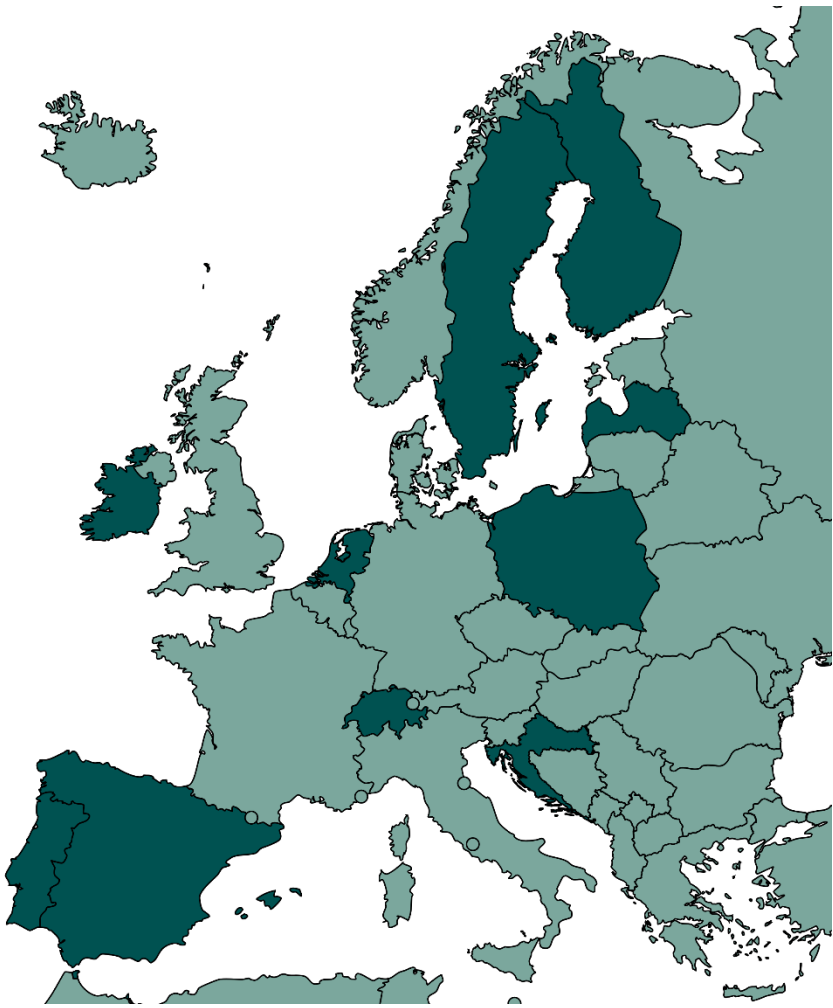
Geographical scope

11 Market Surveillance Authorities from the following 10 EU Countries have participated in this Joint Action coordinated by PROSAFE: Croatia, Finland, Ireland, Latvia, the Netherlands, Poland, Portugal, Spain, and Sweden, and Switzerland which took part outside the framework of the Grant Agreement.

Participating EU Market Surveillance Authorities in JAHARP2021-07

HSA – An tÚdarás Sláinte agus Sábháilteachta Health and Safety Authority
Consumer Rights and Protection Centre
tukes – Finnish Safety and Chemicals Agency
Swedish Work Environment Authority
Euskadi Jaurlaritza Gobierno Vasco
ASAE – Autoridade de Segurança Alimentar e Económica
Human Environment and Transport Inspectorate – Ministry of Infrastructure and Water Management
bfu bpa upi
Junta de Andalucía – Consejería de Transformación Económica, Industria, Conocimiento y Universidades
Urząd Ochrony Konkurencji i Konsumentów
Republika Hrvatska – Državni inspektorat

Coordinated by PROSAFE Joint Actions Best Practice



[1] Directive 2006/42/EC of the European Parliament and of the Council of 17 May 2006 on machinery

Highlights and key results

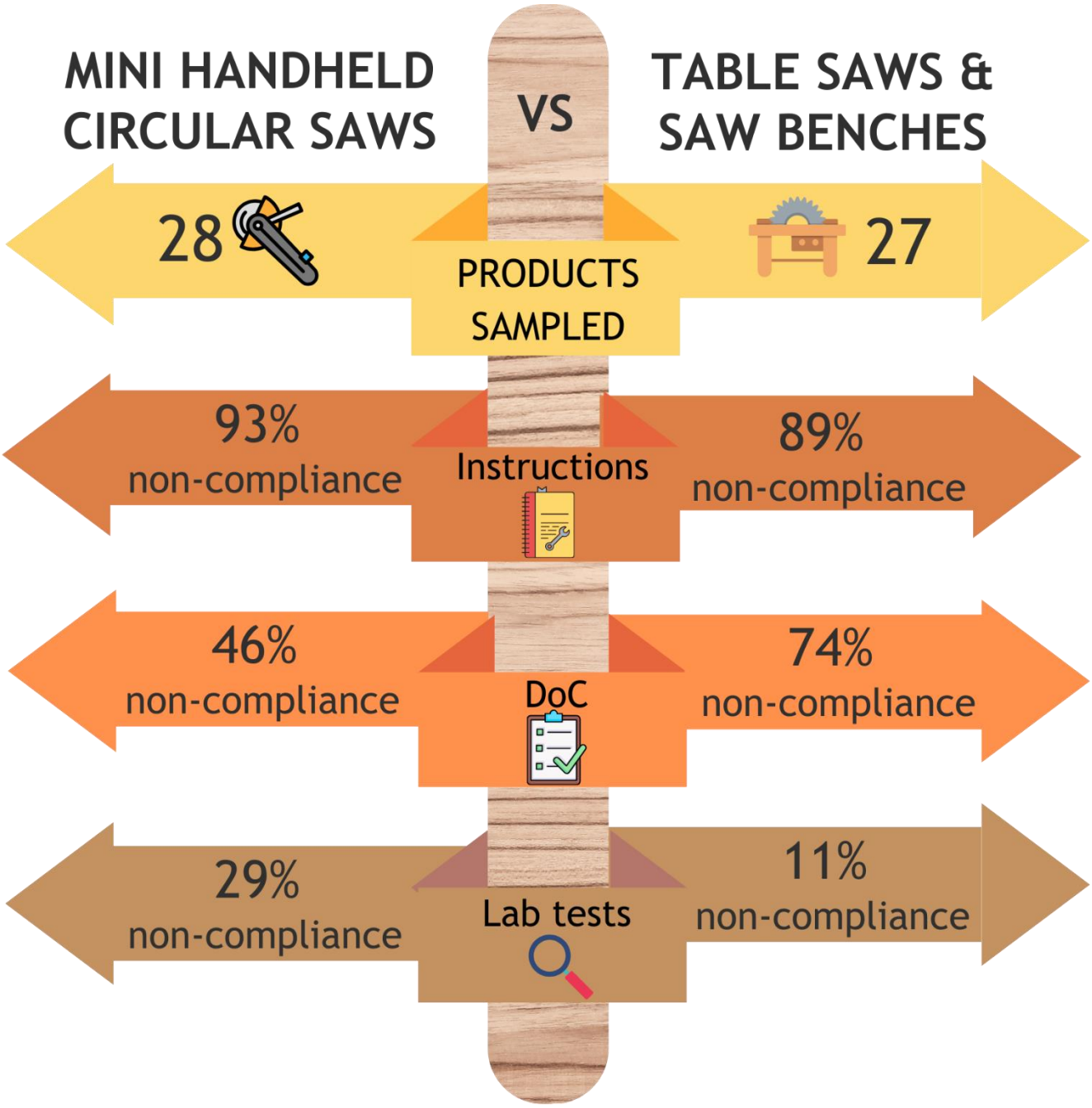


Figure 1 Highlights and key results of JAHARP2021-07

CAUTION!

These results are based on products inspected in the participating countries by experienced market surveillance inspectors. As in most market surveillance activities, the results represent **the targeted efforts that authorities undertook to identify non-compliant products**. Because of that, **the results of this joint action do not present a statistically valid picture of the situation of the entire market.**

Tips for users and EOs

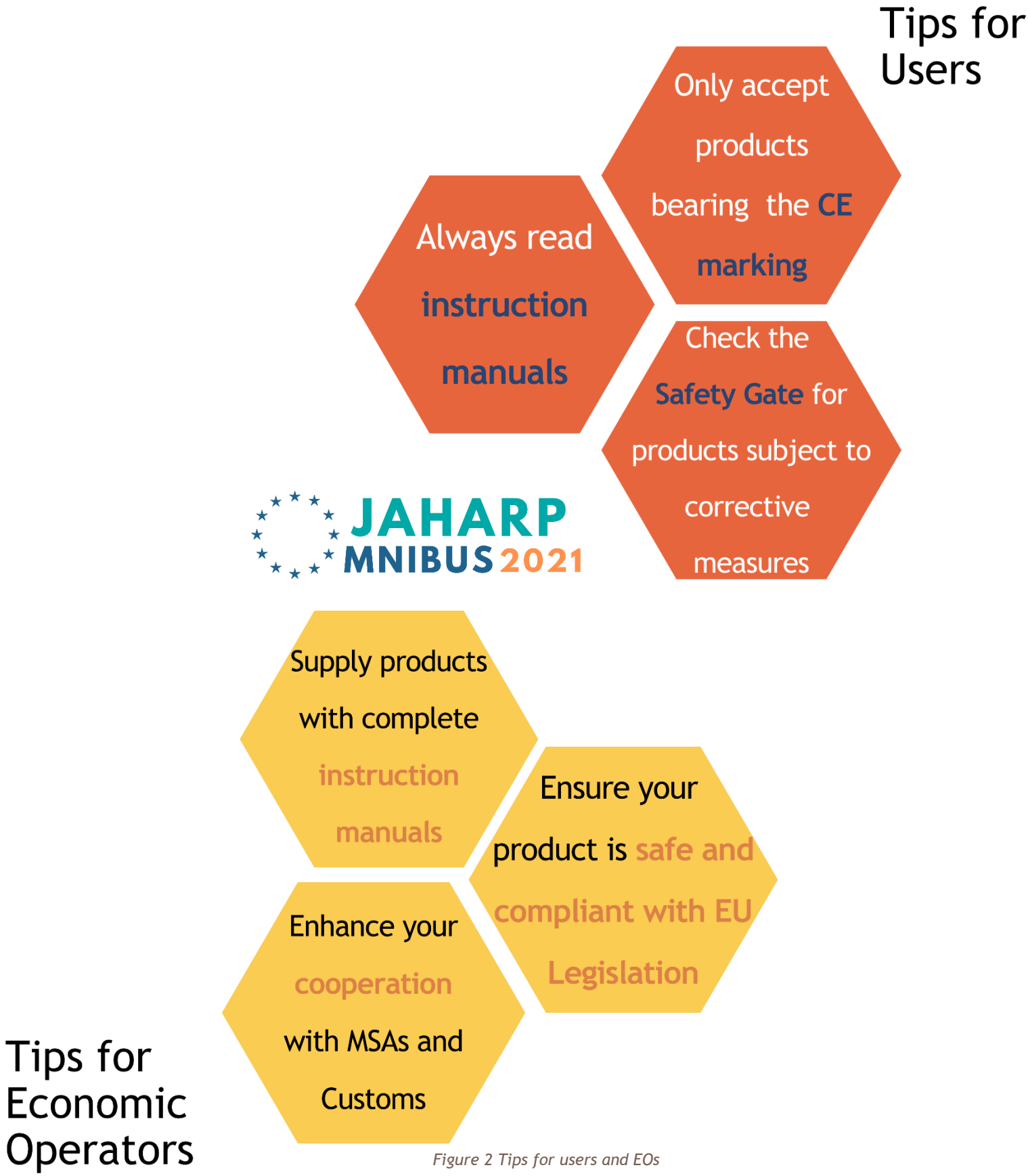


Figure 2 Tips for users and EOs

Introduction to JAHARP2021-07

The Joint Action JAHARP2021-07 dealt with 2 categories of circular saws:

- **Mini handheld circular saws**. These are small handheld tools intended to be held with one hand (which distinguishes them from 'classic' handheld circular saws that have 2 handles). Mini handheld circular saws are used with saw blades having a diameter of no more than 140 mm. They include mains-powered and battery-powered (cordless) tools.
- **Transportable table saws and saw benches.** These are circular saws having a saw blade mounted in a table on which the workpiece is supported during cutting. They are not fixed to the floor but can be carried or wheeled from one site to another.

The pictures below show examples of the two types of circular saws targeted by the project.

Example of mini-handheld circular saw

Example of transportable table saw

Many of the circular saws sampled were products that are purchased both by consumers for private use and by professionals. In fact, while some professional users purchase machines through specialist outlets, many artisans and small enterprises purchase their machines in the same high street do-it-yourself stores or from the same online shops as consumers.

Stakeholders have indicated that battery-powered mini handheld circular saws are **particularly interesting for professionals** since they facilitate work in confined spaces. On the other hand, the cheaper mains powered mini handheld circular saws are mainly intended for consumer use.

Several of the transportable table saws and saw benches sampled were presented as appropriate for use on building sites and were thus intended **mainly for professional use**.

The main risks associated with circular saws are those of **cutting injuries** due to contact with the blade. Where both hands are used to hold the saw, there is a risk of injury to other parts of the body due to loss of control of the machine. Where the saw is held with one hand, there is an increased risk of injury to the other hand. When using circular saw benches (table saws and building site saw benches), both hands are free to hold the work piece and there is consequently an increased risk of contact with the blade.

Projection of splinters from the cutting area can cause **injuries to the face and eyes**. Dust emissions can also cause **occupational respiratory illness**. In addition, there are risks associated with the electric parts of circular saws: **electric shock** in case of contact with live parts or **burns** due to contact with hot parts.

The Machinery Directive 2006/42/EC requires manufacturers to identify and assess these risks and to take the necessary design measures to eliminate or reduce them. They should inform users about residual risks which cannot be eliminated or sufficiently reduced by means of warnings on the product itself or instructions for use.

PROSAFE and the participating MSAs decided to work together to verify the status of compliance of circular saws on the EU market, given the high number of recorded accidents involving these products and the relevance of the risks associated with them.

Methodology

Figure 3 Timeline of JAHARP2021-07

The participating **MSAs collected market and accident data** involving circular saws, in order to help to identify criteria for the selection of products to be sampled.

They prepared a common **checklist for documentary checks on the instruction manuals and EC Declaration of Conformity,** to be carried out by the MSAs themselves.

PROSAFE launched a call for **tender for the selection of a test laboratory** to carry out the test programmes drawn up by the MSAs, based on the relevant harmonised standards.

The test programme was then fine-tuned and agreed with the selected laboratory and **tests were conducted**.

An analysis of the results and an **assessment of the risks** was subsequently conducted, after which **enforcement actions** are following. In particular, MSAs are informing Economic Operators (EOs) of the results and appropriate corrective measures are taken where necessary.

The tests to these products are subjected are destructive, therefore the tested samples are being **disposed of** in accordance with EU rules.

Results of checks and tests

Conformity Assessment

Handheld mini circular saws are not listed in Annex IV of the Machinery Directive, consequently their conformity is subject to the procedure entitled *'assessment of conformity with internal checks on the manufacture of machinery'*.

This means that the conformity is assessed by the manufacturer itself, without the involvement of a Notified Body.

On the other hand, transportable table saws and saw benches are listed under items 1 and 1.1 of Annex IV to Directive 2006/42/EC:

> *1. Circular saws (single- or multi-blade) for working with wood and material with similar physical characteristics or for working with meat and material with similar physical characteristics, of the following types:*
>
> *1.1. sawing machinery with fixed blade(s) during cutting, having a fixed bed or support with manual feed of the workpiece or with a demountable power feed.*

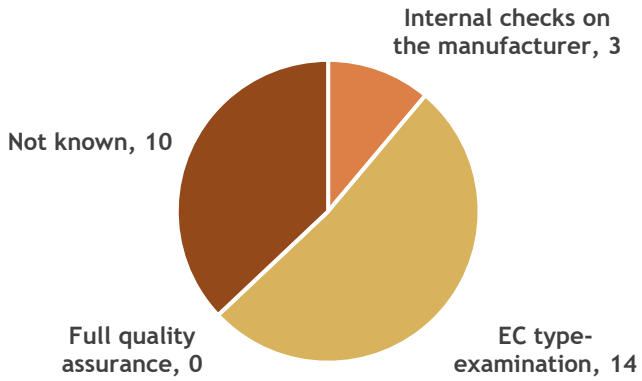
Manufacturers of the categories of machinery listed in Annex IV have a choice of 3 conformity assessment procedures.

a) **Internal checks on the manufacture of machinery (if the manufacturer applies the relevant harmonised standards in full);**

b) **EC type-examination by a Notified Body;**

c) **Approval by a Notified Body of the manufacturer's full quality assurance system.**

The graph below indicates the conformity assessment procedure followed by the manufacturers of the 27 transportable table saws and saw benches sampled.



In the cases where this was not known, either no EC Declaration of conformity was provided, or the EC DoC did not indicate the conformity assessment procedure followed.

It may be noted that the majority of manufacturers opted for the EC type-examination procedure. In addition, **none of the products sampled was subject to approval of the manufacturer's quality assurance system**, confirming the limited uptake of this option shown in similar surveys in the machinery sector.

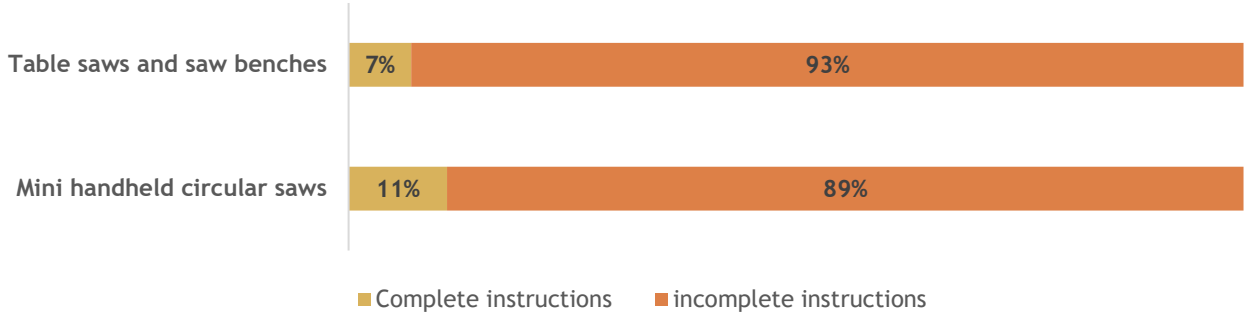
Instructions and EC Declaration of Conformity

The participating authorities conducted checks on the **manufacturers' instructions**, with the support of a checklist developed during the project, based on the requirements for instructions of the relevant harmonised standards.

Only 3 out of 28 instruction manuals for mini handheld circular saws were found to be complete, with 14 instruction manuals lacking multiple warnings and safety-related instructions.

Similarly, **only 2 instruction manuals for transportable table saws and saw benches were complete**, with 1 machine not providing the instructions in the applicable national language and 15 instruction manuals lacking multiple warnings and safety related instructions.

The graph below shows the percentage of compliant instructions for the two product categories.

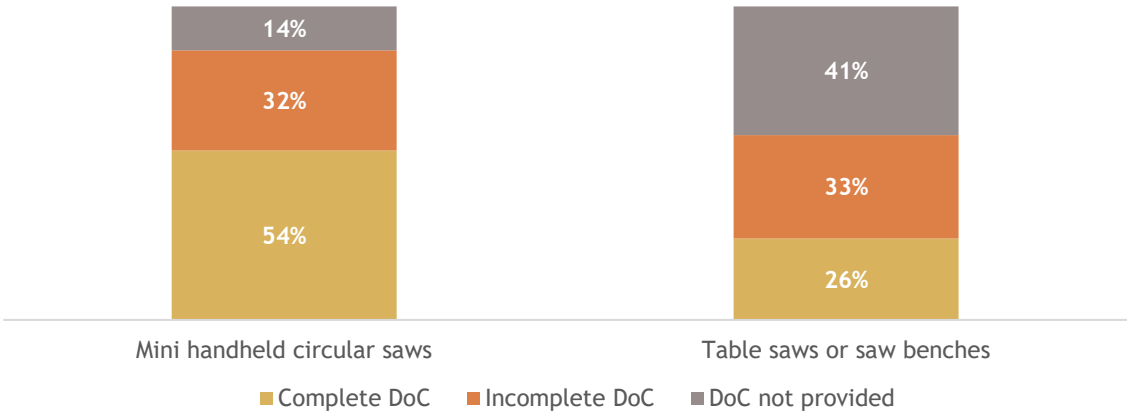


In addition, the MSAs verified the compliance of the provided **EC Declarations of Conformity**.

In relation to mini handheld circular saws, we observed a **54% compliance rate**, with 15 EC DoCs which were complete, 9 not complete, and 4 not provided by the EO.

For transportable table saws and saw benches, **the observed compliance rate dropped to 26%,** with 7 complete EC DoCs, 9 incomplete and 11 which were never provided to the MSAs.

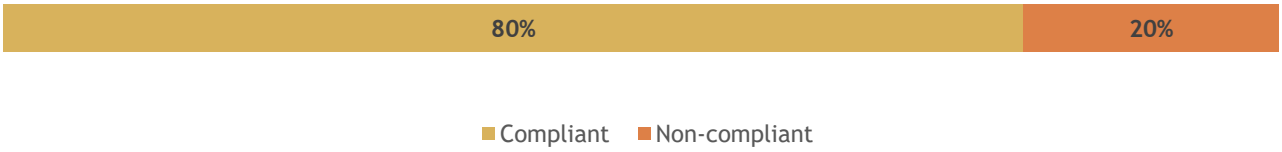
The graph below portrays the percentage of complete, incomplete and not provided EC DoCs for the two product categories.



Laboratory tests

The results of the tests conducted by the selected accredited laboratory were more positive than the results of the documentary checks.

In fact, the MSAs observed a **high level of compliance**, both for mini-handheld circular saws and for transportable table saws and saw benches, with **80% of the tested samples being compliant** with the regulation.



In particular, only 8 out of the 28 mini handheld circular saws failed tests and only 3 out of the 27 sampled table saws and saw benches presented non-conformities.

The graphs below show the level of compliance observed in this Joint Action for both products.

Mini handheld circular saws

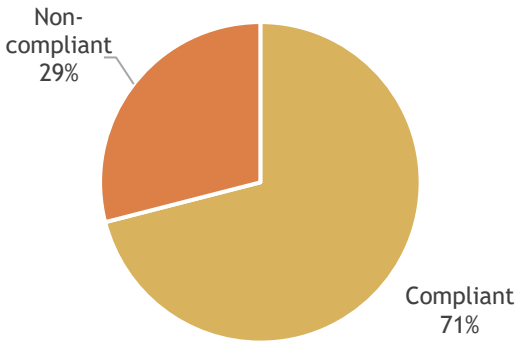
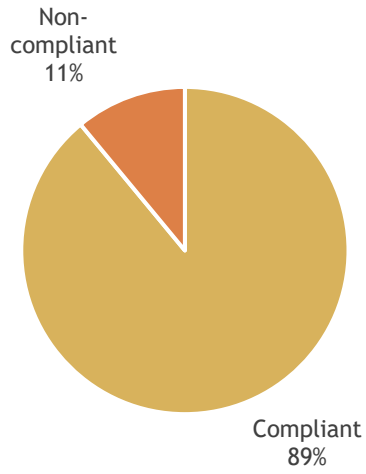


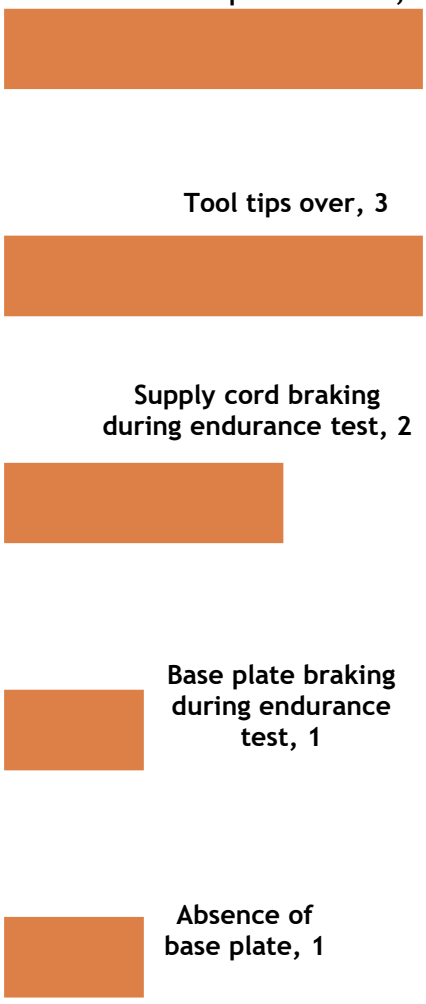
Table saws / saw benches



It is worth noting that, even though the level of non-compliance observed during the Joint Action was low, the tested non-conformities are still relevant and interesting to report.

Concerning mini-handheld circular saws, the 8 non-compliant products presented non-conformities which give rise to significant risks for users.

The graph below shows the technical non-conformities observed and explains the possible risky consequences:



The standard requires one of 2 alternative design measures to be implemented to prevent inadvertent operation of the power switch: either the travel distance of the power switch from the "off to "on" position shall be **at least 6.4 mm**; or **2 separate and dissimilar actions** shall be required to turn the motor on.

These non-conformities give rise to a risk of unintended start-up of the circular saw that can cause a **cutting accident**.

The standard requires the dimensions of the base plate and the weight distribution of handheld circular saws to be such that **blade binding** does not occur.

Three of the tested mini handheld circular saws tipped over during the test, giving rise to a risk of **blade binding** during use.

The standard requires tools provided with a supply cord that is flexed in operation to be constructed so that the supply cord is protected against excessive flexing where it enters the tool.

For two of the mini handheld circular saws tested, the supply cord broke during the test. Failure of the supply cord can give rise to a risk of **electric shock**.

The standard describes the **endurance test** carried out to ensure that the guarding system is able to withstand extended use.

On one of the mini handheld circular saws tested, the base plate, which is an essential part of the guarding system, broke during the test. Failure of the base plate during use can lead to a **loss of control of the tool with a risk of cutting**.

The standard describes 4 possible guarding systems for handheld circular saws, all of which include a base plate surrounding the saw blade at least from the front, rear and the motor side.

One of the mini handheld circular saws tested was not fitted with a base plate, which makes proper control of this tool during use problematic, giving rise to an **increased cutting risk**.

Concerning table saws and saw benches, the 3 non-compliant products presented non-conformities which entail significant risks for users.

The graph below shows the technical non-conformities observed and explains the possible consequences:

Insufficient thickness of saw blade guard material, 2

The standard requires saw blade guards made of polycarbonate material to have a thickness of at least 3 mm.

Two of the machines tested did not satisfy this requirement, their saw blade guards having a measured thickness of 2.5 mm and less than 2 mm respectively. Insufficient thickness of the saw blade guard material gives rise to of a **risk of injury from ejected objects** if the saw blade breaks up during use.

Incorrect design of riving knife, 1

The riving knife is a curved part situated behind the circular saw blade. It enters the kerf behind the blade to prevent the kerf from closing up and binding the blade. The standard sets out design requirements for the riving knife.

Non-conformities with these requirements give rise to an **increased risk of blade binding which can lead to ejection of the workpiece**.

Access to exposed saw teeth, 1

The standard requires that access to the top and sides of the exposed saw teeth is prevented from the guard mounting point on the riving knife to the first cutting tooth at the machine table level for all intended saw blade diameters and highest vertical position of the saw blade.

This non-conformity gives rise to a **risk of contact between the operator's fingers and the saw blade teeth**.

No guarding system for tilted saw blade, 1

The standard specifies that, on machines that have the facility to tilt the saw blade, either an auxiliary guard shall be provided, or the saw blade guard shall be provided with an extension for use when the saw blade is tilted.

On one saw bench, the saw blade could be tilted but neither an auxiliary guard nor a guard extension was provided. Consequently, fingers could come into contact with the saw blade on the side opposite the direction of tilt, giving rise to a **risk of cutting**.

Access to saw blade below the table, 1

The standard requires access to the saw blade below the table to be prevented by a fixed guard.

On one of the tested saw benches, no fixed guard was fitted, and the saw blade was accessible below the table, giving rise to a **cutting risk.**

Automatic restart after interruption of power supply, 1

The standard states that, after voltage recovery, following an interruption of the power supply, **the tool shall not restart automatically.**

On one of the transportable table saws tested, the machine restarted after interruption and reconnection of the power supply, creating a **risk of injury due to unexpected start up**.

Risk Assessment and Follow-up measures

After documentary checks and laboratory testing, Market Surveillance Authorities (MSAs) carried out an assessment of the level of risk created by the non-conformities detected, in order to then decide on the corrective measures to be taken with respect to non-compliant products.

The Project Group worked together on some examples of risk assessment using the European Commission's online RAG application, in order to reach a common understanding on the levels of risks detected.

The method used consists of the development of one or more accident scenarios triggered by the non-conformity considered. The application then computes the combination of the severity of the possible injury and the probability of occurrence of each step in the scenario, and generates a risk level: **low**, **medium**, **high** or **serious**.

The treemap chart below shows the risks associated to the circular saws tested under this project:

It can be observed that the majority of mini handheld circular saws and table saws checked were considered as a low risk, with only **1 assessed as a serious risk and 6 as a high risk**.

Based on the risk assessment performed, each national authority then evaluated the measures to apply on the non-compliant products.

Before taking a final decision on enforcement measures, the authorities consulted the economic operators concerned (distributors, importers and manufacturers) to seek their comments on the findings of the inspections. For transportable table saws and saw benches for which the EC type-examination procedure was applied, the comments of the Notified Body involved were also considered.

Enforcement measures were taken for all no-compliant products, among which it is worth noting that **mandatory withdrawal** from the market was requested for three products.

In addition, the results of the inspections and tests were notified on the internal area of the EU Information and Communication System for Market Surveillance (ICSMS), in order to make them available to the authorities of all EU Member States.

Conclusions and contribution to future work

The results of the testing of mini handheld circular saws and transportable table saws and saw benches indicate a **generally satisfactory level of technical compliance** with the essential health and safety requirements of the Machinery Directive and the specifications of the relevant harmonised standards.

In contrast, **many of the instruction manuals provided by manufacturers were incomplete and several lacked essential information for a safe use of the circular saws**. Furthermore, many manufacturers failed to comply with their obligation to provide an EC Declaration of Conformity or their EC DoC was incomplete.

These findings can be taken into account by the MSAs when **setting priorities for future market surveillance activities on these or similar products**. For example, the findings indicate that documentary checks, that can be carried out by the MSAs themselves without the assistance of a Test Laboratory, can make an important contribution to conformity.

The results of the tests and checks carried out during the Joint Action were presented to representatives of consumers' associations, manufacturers' associations, the Notified Bodies Group and relevant Standardisation groups during the Final Conference of JAHARP2021-07 which was held on 11 June 2024.

During the event, several stakeholders raised the **apparent contradiction** between the generally satisfactory level of technical conformity of the circular saws sampled and tested and the relatively large number of accidents involving these machines.

This is probably explained by the fact that handheld circular saws and table saws with manual feed of the workpiece are machinery presenting a **high level of residual risk**, that is to say, risk that cannot be fully prevented by integrated protective measures. In particular, on these machines, the rotating saw blade cannot be completely enclosed during use, consequently there is an important residual risk of accidental contact with the rotating blade.

Better instruction manuals can contribute to safer use. However, the reduction of the number of accidents involving such power tools would require **improved training of users (in the workplace) and better education of consumers** on how to use such power tools safely.

In this respect, 'digital' instructions could be supported by online videos, demonstrating the gestures required to reduce the risk of accidents during use.

PROSAFE is coordinating a number of other projects and Joint Actions with the aim of contributing to the implementation of Regulation (EU) 2019/1020, together with other regulations concerning products' safety and energy efficiency. We will continue working with market surveillance authorities, consumer and business associations to ensure that products comply to EU Safety and Environmental Regulations.

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