JOINT MARKET SURVEILLANCE ACTIONS 2016 ON PRODUCT SAFETY

GPSD 2001/95/EC

FINAL REPORT POWER TOOLS 3 - IMPACT DRILLS

The Joint Market Surveillance Action on Consumer Products 2016 (JA2016)

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PROSAFE Joint Actions Best Practice

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NB

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List of Abbreviations

AdCo/ADCO	Administrative Cooperation Group of market surveillance authorities
ANEC	The European Consumer Voice in Standardisation
CE	Conformité Européenne
CEN	European Committee for Standardization
CHAFEA	Consumers, Health and Food Executive Agency
CRPC	Consumer Rights Protection Centre, Latvia
DG JUST	European Commission, Directorate-General Justice and Consumers, responsible for EU policy on justice, consumer rights and gender equality
DIY	Do It Yourself
DoC	Declaration of Conformity
EC	European Commission
EEA	European Economic Area
EFTA	European Free Trade Association
EN	European Standard
EN 60745-1	European Standard for Hand-held motor-operated electric tools - Safety - Part 1: General requirements
EN 62841-1	European Standard for Electric motor-operated hand-held tools, transportable tools and lawn and garden machinery - Safety - Part 1: General requirements
EN 60745-2-1	European Standard for Hand-held motor-operated electric tools - Safety - Part 2-1: Particular requirements for drills and impact drills
EPTA	The European Power Tool Association
EU	European Union
FTP	File Transfer Protocol
ftp	fail-to-pass
GA	Grant Agreement
GPSD	General Product Safety Directive
ICSMS	Information & Communication System for Market Surveillance
ISO	International Organization for Standardization
JA	Joint Action
JA2016	Joint Market Surveillance Action 2016 GA No: 739851
MCCAA	Malta Competition Consumer Affairs Authority
MEBW	Ministry of Environment, Climate Protection and the Energy Sector of Baden-Wuerttemberg, Germany
MINGO	Sector of Market Surveillance for the Ministry of Economy, Croatia
MS	Member State
MSA	Market Surveillance Authority
n.a.	not applicable
PROSAFE	Product Safety Forum of Europe
PRC	The People's Republic of China
RA	Risk Assessment
RAG	European Commission's Risk Assessment Guidelines tool
RAPEX	The Rapid Alert System for Dangerous Non-food Products
ROGA	Regierung von Oberbayern – Gewerbeaufsichtsamt, Germany
SAMTS	State Agency for Metrological and Technical Surveillance, Bulgaria
SCRPA	State Consumer Rights Protection Authority, Lithuania
SIQ	Slovenian Institute for Quality and Metrology
TC	CEN Technical Committee
UOKIK	Office of Competition and Consumer Protection, Poland
WP	Work Package

Executive Summary

This report presents the activities undertaken and the results achieved in the Product Activity "Power Tools 3 of the "Joint Market Surveillance Action on Consumer Products 2016 – JA2016", co-funded by the European Union under the Grant Agreement No. 739851. The project was coordinated by PROSAFE.

The activity was carried out by **9** Market Surveillance Authorities (MSAs) from **Bulgaria, Croatia, Germany (Bavaria, Baden Württemberg and Bremen), Latvia, Lithuania, Malta and Poland**. **Turkey** participated as a collaborating partner outside of the financial scheme.

The JA2016 Power Tools 3 Activity focussed on **impact drills**. It was a follow-up to the JA2014 and JA2015 activities on Power Tools. All in all, it aimed to:

- Build on the work undertaken within previous Joint Actions on Power Tools, Angle grinders (JA2014) and Handheld electrical circular saws (JA2015), thereby increasing the safety of products within this product category;
- Ensure that impact drills are safe to use;
- Develop best practices and exchange market surveillance experiences for products placed in "Do It Yourself" (DIY) shops;
- Develop risk assessment templates;
- Continue to support the harmonisation of market surveillance across the EEA within this sector;
- Further update the Power Tools Priority List for future Joint Actions.

To that end, the participating MSAs worked jointly to:

- Study their national markets for impact drills;
- Use this data to make decisions on sampling;
- Visit manufacturers/importers/wholesalers/retailers/e-traders to inspect and collect products;
- Test all the selected samples at an appropriately skilled and accredited laboratory in Europe;
- Carry out harmonised risk assessments;
- Undertake coordinated follow-up actions and/or appropriate administrative activities on non-compliant products;
- Report on the follow-up actions taken to improve safety for consumers.

A total of **100** impact drills were sampled from different economic operators, 4 of them from on-line traders. The models considered as potentially dangerous products were sent for testing to an accredited laboratory selected through a public tender procedure published on the PROSAFE website and also circulated via email to large list of laboratories compiled together with the participating MSAS.

The criteria for the testing and the examination programme was defined by the clauses of two harmonised standards, a general one on safety for all power tools and a specific one regarding the safety requirements for drills and impact drills.

The test results for the mechanical properties performed at an accredited laboratory showed that 86% of the impact drills passed without any non-conformity being revealed. However, 14% of them had 1 or more non-conformities based on the applied standards, such as mechanical hazards and inadequate mechanical strength failures. The risks posed by these non-conformities were assessed and the results showed that 2 products presented serious risks (such as risk of electrocution due to broken enclosures), 4 products presented medium risks (due to static stalling torque or slip torque caused by a failure of the clutch mechanism failure), and a few others presented low risks (due to lock on device failure or lack of markings, instructions or safety warnings).

Conversely, the market surveillance administrative checks on markings, user instructions and warnings showed a different picture. The Action prepared a checklist for use as a guiding tool during the inspections which revealed that **only 53% of the inspected impact drills were entirely compliant**. The most common shortcoming appeared to be lacking instruction and safety warnings.

Caution!

The above results are based on products that were sampled from the markets in the participating countries by experienced market surveillance inspectors that were looking for non-compliant and potentially unsafe products. As in any routine market surveillance activity, the results represent the targeted efforts that authorities undertake to identify unsafe products. They do not give a statistically valid picture of the market situation.
The samples were tested at an accredited laboratory. The test focussed on those safety requirements that have the largest impact on consumer safety.

The test results were subject to a risk assessment using the European Commission's Risk Assessment Guidelines (RAG) Tool[1]. The participating MSAs analysed the risks associated with the safety non-conformities discovered during the checks and the testing in order to determine appropriate corrective measures in liaison with the key stakeholders and the Economic Operators. Detailed feedback concerning the standard was also conveyed to the relevant CENELEC Working Group - CLC/TC 116 (Safety of motor-operated electric tools) during the final meeting of the Activity.

JA2016 created EU added value in many different ways. With 21 Member States working together, the project reflected a truly pan-European survey of the marketplace providing a platform for sharing expertise and for the spread of best practices. The European Commission's generous funding ensured that the number of samples tested greatly exceeded the number that individual MS could afford on their own.

Moreover, JA2016 delivered economies of scale driving down unit test costs, thus helping to stretch the limited resources even further. MSAs also had the opportunity to discuss their risk assessments thus promoting a more consistent approach. Overall, the Joint Action 2016 made a significant contribution to the achievement of a high-level consumer protection and a level playing field for all Economic Operators across Europe.

[1] https://ec.europa.eu/consumers/consumer-safety/rag/

1 Introduction

Funding for the testing of power tools was initially granted by the European Commission under JA2014 as Power Tools were identified as a product sector worthy of more sustained attention by the MSAs. One of the objectives of the work undertaken under JA2014 was the establishment of a priority list to be followed in subsequent Joint Actions. Products have been included in subsequent proposals for Joint Actions in accordance with the relative ranking given to them in the priority list. In JA2014 handheld electric angle and straight grinders were tested and under JA2015 Handheld electrical circular saws. The product ranked the third priority was impact drills and they have been tested in JA2016.

Since 2007, there have been **12 RAPEX notifications** concerning drills and impact drills. Four of these concerned a risk of injury, eight a risk of electric shock, five a risk of fire and another one a risk of burns. Other risks associated with these products include cuts, abrasions, punctures; drill-curls can cut, drill-bits can break and cause injuries; sprains and strains (wrist, hand, arm, shoulder); due to drill reaction torque[2]; noise (hearing) when long term exposure can contribute to hear damage and lastly vibration where long term exposure can lead to "white fingers"[3]. The significance of the hazards posed by these products has grown in recent years due to the increasing migration of more powerful professional products to the consumer market and the growing numbers of cheap imported products that have become available in the lower end of the market especially online.

1.1 Participating Market Surveillance Authorities

The Power Tools 3 – Impact Drills activity was undertaken by 9 MSAs from 7 EU Member States. Turkey participated as an observer outside of the financial scheme. The applicant body which also took the overall responsibility for the Joint Action was PROSAFE. The Activity Leader was Charles Tanti of the MCCAA (Malta), who was supported by the PROSAFE Activity Coordinator, Borut Matkovic.

Country	Acronym	Market Surveillance Authority
Bulgaria	SAMTS	State Agency for Metrological and Technical Surveillance
Croatia	MINGO	Sector of Market Surveillance of the Ministry of Economics
Germany (Baden-Wuerttemberg)	MEBW	Ministry of Environment, Climate Protection and the Energy Sector of Baden-Wuerttemberg
Germany (Bavaria)	ROGA	Regierung von Oberbayern - Gewerbeaufsichtsamt
Germany (Bremen)	Bremen	Gewerbeaufsicht des Landes Bremen
Latvia	CRPC	Consumer Rights Protection Centre
Lithuania	SCRPA	State Consumer Rights Protection Authority
Malta	MCCAA	Malta Competition and Consumer Affairs Authority
Poland	UOKIK	Office of Competition and Consumer Protection

Table 1: The 9 participating Market Surveillance Authorities from 7 EU Member States

[2] **Torque** is a function of force and the distance at which force is applied. Torque reaction in drills is caused by the turning force, required to drill. To counteract the torque reaction, the operator must apply an equal and opposite force on the handle of the tool.

[3] **Vibration white finger**, also known as hand-arm vibration syndrome, affects the blood vessels, nerves, muscles, joints and connective tissue of the hand, wrist and arm, leading to nerve damage including pain, tingling, numbness, and reduced dexterity.
Workers who use hand-held or hand-guided power tools for more than a few hours each day are at risk of vibration white finger. The period of time between exposure to vibration and development of symptoms is variable, ranging from months to years. The risk of developing hand-arm vibration syndrome increases with the intensity and duration of exposure to vibration, and continued exposure results in worsening symptoms.

1.2 Main Objectives

JA2016 Power Tools 3 – Impact Drills aimed to:

- Build on the work undertaken during Power Tools 1 & 2 and thereby continue increasing the safety of products within this category;
- Ensure that impact drills are safe to use;
- Continue supporting harmonisation of market surveillance across the EEA within this sector;
- Develop risk assessment templates;
- Take action if and where necessary;
- Coordinate with stakeholders including ANEC and CENELEC.

1.3 The Phases of the Activity

PHASE 1 – Preparation stage, starting in September 2017 (M1) – (around 5 months, M1-M6): Preparations involved an Action for finalising the detailed activity plan and preparing guidance to the participating authorities in the form of checklists, sampling schemes and some other related tools. Additionally, the test criteria were chosen and the call for tender for test laboratories was launched.

PHASE 2 – Implementation stage (around 10 months, M6-M16): This phase involved the adjudication of the laboratory contract and the actual inspections, sampling and testing. Sampling activities were held from late March 2018 to the end of November 2018. Checklists were used to target impact drills showing potential signs of non-compliances. In total 100 samples were sent for testing.

PHASE 3 – Final Results & Follow-up (around 10 months, M16-M26): This phase put emphasis on the enforcement measures and **follow-up** actions taken by the respective MSAs. Furthermore, it involved the presentation of the project results to stakeholders and participants, discussions on the non-compliances found, the assessment of all risks identified during the tests, the analysis of the test results, and the drafting of this Final Technical Report.

The Activity included **6** physical meetings. Furthermore, the Activity Leader and the coordinator participated in both the JA2016 Annual Workshops and the Risk Assessment Seminar.

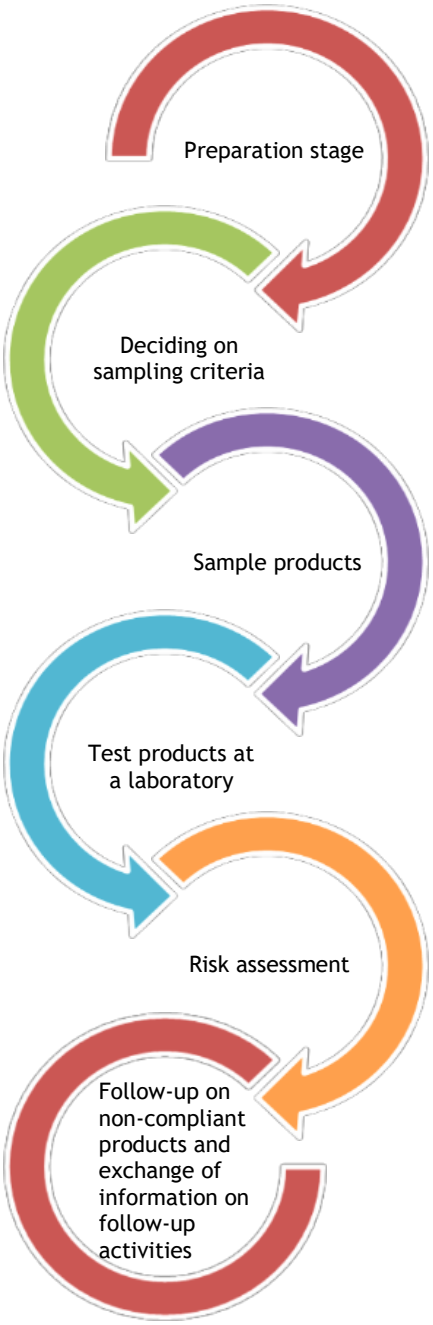

Figure 1: The Phases of the Activity

1.4 Timeline for the Activity

Month	M*	Main activities	Meetings	Deliverable
Sep 2017	M1	Introduction and presentation of Joint Action 2015	Launch event	10.1
Oct 2017				
Nov 2017	M3	Kick-off activities: Undertaking a market analysis to uncover the nature of the market and the risks posed by the product group including factors such as number of actors on the marketplace, their sizes and maturity, the relative share of import and manufacturing, number of products on the market, annual sales, on-line share, results from previous activities and knowledge of emerging hazards. Establishment of an outlined plan of the activities.	Kick-off with stake-holders/ planning meeting	D10.2
Mar 2018	M6	Detailed approach to market surveillance activities, development of tools for sampling: • Input from participating members of any work/projects conducted with regards to impact drills; • Agreement on draft laboratory tender document, listing of available/capable labs for testing; • Testing programme; • Sampling checklists. Document: Tools for market surveillance	1st project meeting	D10.2 D10.3
May 2018	M8	Discussing laboratories' reactions on call for tender, confirmation of sample scheme and sample list. Definition of rule for taking samples from the market to avoid overlapping, final selection of laboratory. Documents: Summary and evaluation of responses to call for tender, contract with selected lab.	2nd project meeting	D10.2 D10.4
Nov 2018	M14	Visit of laboratory for demonstration of tests and for reception and discussion of available test results. Analysis of non-conformities. Exchange of views from test reports. Development of risk assessments based on identified non-conformities. Discussion of consequent follow-up activities with Economic Operators.	3rd project meeting day one and two	D10.2
Mar 2019	M18	Discussion about final results of Impact drill testing and administrative market surveillance, review of Risk assessment templates produced during 3rd meeting and imposed measures against Economic Operators. Deeper look into DoC shortcomings.	4th project meeting	D10.2
Jun 2019	M21	Presentation of results to stakeholders (open session). Exchange of information on follow-up activities up to date and discussion about dissemination of results in MS's (closed session). Document: Statistics on market surveillance activities	5th project meeting	D10.2 D10.5
Sep 2019	M25	Presentation of Activity results at a conference-workshop to MSAs participating in JA2015 and stakeholders.	JA2016-Final Conference	
Oct 2019	M26	Final reporting Activity Power Tools 3		D10.6

Legend: Mxx* = Activity month no. connected to the previous calendar month
D10.x = Deliverable number from Work package WP10

Table 2: Timeline for the Power Tools 2 Activity

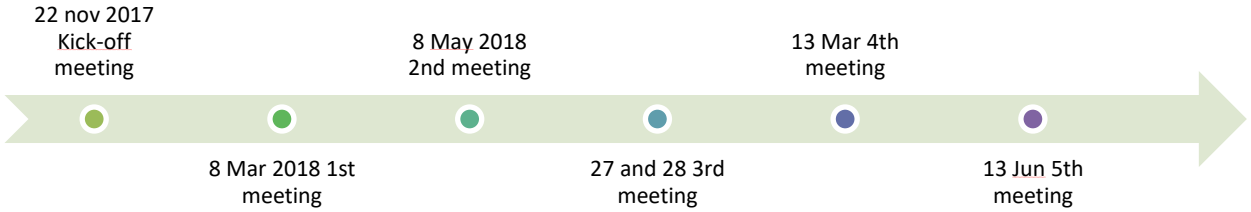

Figure 2: Timeline with overview of Power Tools 3 physical meetings

2 Setting up the Activity

2.1 Budgeted Activities

The total budget for the Power Tools 3 Activity allowed the testing of **100** impact drills, including the examination of markings and mechanical properties. The checks on markings, safety warnings instructions and the examination of the Declarations of Conformity[4] (DoC) were conducted by the participating MSAs during the sampling phase.

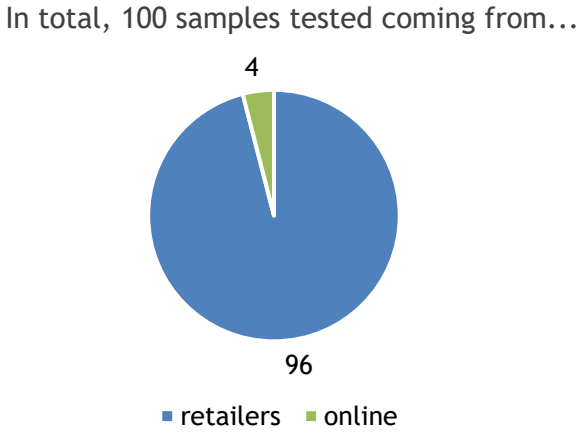

Figure 3: Source of the 100 samples

2.2 Tendering Process for Test Laboratories

A list of potential testing laboratories from within the European Economic Area (EEA) was drawn up by the participating MSAs and the Activity Coordinator. A call for tender – in line with the effective EC Regulation on public procurement[5] – was then prepared and sent to **54** accredited laboratories in EEA. The call was publicised on PROSAFE's Twitter account (@PROSAFE_org) and website[6]. The European Commission was formally notified about this call.

A total of four laboratories replied. Their offers were evaluated at length together with the participating MSAs and the contract was awarded to the one offering the best value for money.

The purpose of the testing was to verify that the impact drills sampled by the MSAs met all clauses

[4] Declaration of Conformity is a legal Document which needs to be completed for all CE Marked products sold in the European Union with few exceptions. Almost all new products must be covered by a Declaration of Conformity.
[5] Directive 2014/24/EU of the European Parliament and of the Council of 26 February 2014 on public procurement and repealing Directive 2004/18/EC
[6] Call for tender:
http://www.prosafe.org/images/Documents/JA2016/Tender/PROSAFE_JA2016_PT3_Call_for_Tender.pdf

within the current applicable standards and were safe for use.

2.3 Selecting Products, Sampling

The project group planned to sample 100 impact drills as foreseen in the Grant Agreement. Each MSA took 11 samples with the exception of Bremen who took 12.

At the kick-off meeting, the participants decided to focus the sampling on models that were available in the common DIY consumer market without excluding the professional/specialist shops. This decision was supported by key stakeholders, such as the European Power Tool Association (EPTA) and the European Consumer Voice in Standardisation (ANEC).

More specifically, **96** samples were taken from retail shops and **4** samples were taken online by the MSAs from Latvia and Baden Württemberg. This approach reflects concerns about the safety of these products as they have migrated from the professional market to the less experienced consumer-DIY market.

In order to prevent duplication and to ensure an adequate coverage of the market, the project group developed a tool for the rapid exchange of information on sampling. The participants pre-selected/pre-booked specific days for sampling and informed the Activity Coordinator to this end. In turn, the latter disseminated the master plan to all participants, thus establishing a common sampling schedule. In addition, an up-to-date log maintained by the Activity Coordinator with data sent systematically by the MSAs on the sampled products enabled all participants to know the details of the manufacturer and models that had already been sampled.

2.2.1 Sample price classes

Figure 4 shows the distribution of the samples in terms of their price class — in intervals of €10 for the lower classes and €20 for the higher ones. Based on the sampling results the lowest class of €10 to €20 has a share of 12%, the price classes of €20 to €30 and €30 to €40 had the biggest share with 27% and 18% respectively, and the more expensive classes of €100 to €160 are also represented with a share of 3%.

It is important to note that the price of a tool can vary from market to market. Furthermore, sampling in a market surveillance context never gives a representative statistical picture of the EU market. It rather aims at detecting dangerous and/or unsafe products.

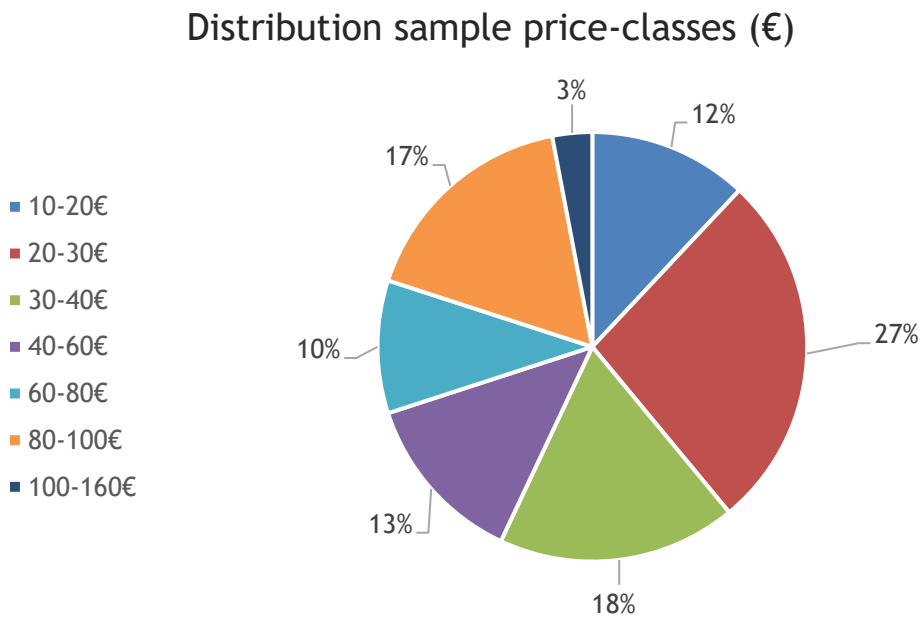

Figure 4: Distribution of the samples over different price classes

2.2.2 Sample gathering

The Activity Coordinator drafted a detailed checklist in accordance to the Machinery Directive 2006/42/EC[7] and the EU harmonised Standards EN 60745-1[8] and EN 60745-2-1[9]which was subsequently approved by the participating MSAs during the 2nd meeting. Participants carried out the administrative checks during the sampling process, while the contracted lab conducted the mechanical tests.

The MSAs recorded details regarding the Country of Origin for the 100 sampled impact drills — see Figure 5 below. The share of samples produced outside of EU was **37%**.

While some of the manufacturers designed and produced the impact drills themselves, many products were originally manufactured in Eastern Asia under their own brand names. This can easily be detected from the marking plate on the tool that often displays "PRC (The People's Republic of China)".

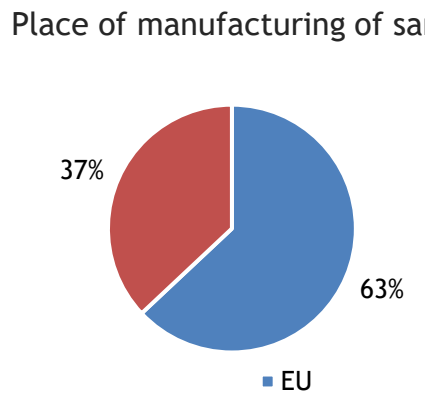

Figure 5 Country of Origin for all 100 impact drill samples

3 Testing

3.1 The Testing Program

The purpose of testing in a market surveillance context is to verify whether the product meets the essential health safety requirements and relevant regulations. In the case of impact drills, they are machinery as defined in the Machinery Directive 2006/42/EC. The essential health and safety requirements that the product has to comply with are laid down in Annex 1 to this Directive.

A manufacturer can demonstrate that he fulfils these requirements by complying with the clauses of the applicable harmonised standard(s) developed for the relevant product insofar as they cover the requirements of Annex I. The standards for these products comprise a general part -Part 1- and a specific part - Part 2-. The general part describes requirements and tests that apply to a whole group of power tools. Today, there are **23** different specific parts for this family of standards, each of them describing additional requirements and tests applicable to different power tool categories.

For the impact drills the applicable standards are EN IEC 60745-1:2009 and EN IEC 60745-2-1:2010. It has to be pointed out that a new standard, *EN IEC 62841-1:2015 Electric motor-operated hand-held tools,*

[7] Directive 2006/42/EC of the European Parliament and of the Council of 17 May 2006 on machinery , and amending Directive 95/16/EC (recast) OJ No L 157, 9 June 2006, retrieved from: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32006L0042

[8] EN 60745-1 Hand-held motor-operated electric tools - Safety - Part 1: General requirements- All standards can be obtained from the national standardisation bodies if nothing else is stated. An overview of these bodies can be found on the website of the European Committee for Standardisation, CEN at www.cen.eu.

[9] EN 60745-2-1:2010 Hand-held motor-operated electric tools - Safety - Part 2-1: Particular requirements for drills and impact drills

transportable tools and lawn and garden machinery - Safety - Part 1: General requirements, is already in force and that another one, *EN IEC 62841-2-1:2018 Electric Motor - Operated Hand-Held Tools, Transportable Tools and Lawn and Garden Machinery - Safety - Part 2-1: Particular requirements for handheld drills and impact drills*, was also published in March 2018. However, EN 60745-1:2009 and EN 61029-1:2009 remain valid until all the specific parts that are used in conjunction with them are withdrawn. Therefore, all sampled impact drills were tested against the "old" standards, since the standard EN IEC 60745-2-1:2010 will only be withdrawn on 01.02.2022.

The laboratory was contracted for the testing according to these two standards. The contract included the following tasks:

- Examination of marking;
- Testing of the samples according to the aforementioned standards — Table 3 gives an overview of the clauses that were included in the test program;
- Reporting the test results for each sample with a description and photos of the identified non-conformities;
- Providing an overall sheet with an overview of the samples and the identified non-conformities and other test results.

During the project, the participating MSAs decided either to exclude or limit the clauses for which testing was to be undertaken in order to reduce the testing price per sample and meet the foreseen quantity of samples as per the Grant Agreement — the budget only covered the most essential standard tests. MSAs were mostly interested in detecting safety-critical non-conformities that are relevant for DIY consumer safety.

The laboratory prepared a test report for each sample which included the test results and an indication whether the impact drill passed or failed. Furthermore, it specified which sub-clauses of the standard were not met and provided descriptions of the non-conformities. Additionally, photos of all non-conformities including a video of the dropping test for each tested sample were provided together with comments and other relevant information. All participants got access to a FTP (File Transfer Protocol) account of the laboratory's server in order to be able to follow the progress of the tests and download the test reports.

Finally, a visit to the laboratory organised at the end of November 2018 gave the participants the opportunity to see several test demonstrations first-hand and to discuss the results with the lab experts.

The lab tests were finalised at the end of October 2018.

Clause	Testing requirements and comments
9	Protection against access to live parts In particular clauses: 9.1, 9.2, 9.4, 9.5
10	Start In particular clauses: 10.1, 10.2
11	Input and current
13	Resistance to heat and fire In particular clauses: 13.1, 13.2
17	Endurance In particular clauses: 17.1, 17.2,
18	Abnormal operation In particular clauses: 18.1, 18.5, 18.6, 18.7, 18.8
19	Mechanical hazards In particular clauses: 19.1, 19.101, 19.2, 19.4, 19.9
20	Mechanical strength In particular clauses: 20.1, 20.2, 20.3, 20.4, 20.5, include video recording for sub-clauses

	20.2 and 20.3'.
21	Construction In particular clauses: 21.1, 21.2, 21.8, 21.9, 21.10, 21.11, 21.12, 21.13, 21.14, 21.17, 21.18, 21.19. 21.20, 21.21, 21.22, 21.23, 21.24, 21.25, 21.26, 21.27, 21.28, 21.29, 21.30, 21.31, 21.32, 21.34,
22	Internal wiring In particular clauses: 22.1, 22.2, 22.3, 22.4, 22.5,
23	Components In particular clauses: 23.1, 23.2, 23.3, 23.4, 23.5, 23.10
24	Supply connection and external flexible cords In particular clauses: 24.1, 24.2, 24.3, 24.4, 24.5, 24.6, 24.7, 24.8, 24.9, 24.10, 24.11, 24.12, 24.13, 24.14, 24.15, 24.16, 24.17, 24.18, 24.19. 24.20, 24.21
26	Provision for earthing In particular clauses: 26.1, 26.2, 26.4, 26.5
27	Screws and connections In particular clauses: 27.1, 27.2, 27.3, 27.4, 27.5
28	Creepage distances, clearances and distances through insulation In particular clauses: 28.1, 28.2

Table 3: The EN IEC 60745 chapters with test criteria both from part 1 and part 2-1

3.2 Test Results

The joint test and examination programme identified administrative non-conformities in **47 samples** and technical nonconformities in **14** out of the **100 samples**. Figure 6 shows that **errors in "markings and instructions" account for 65% of the total identified instances of non-conformities for the 100 samples tested**. A number of the samples presented multiple types of non-conformities at the same time, hence the higher percentage of instances of non-compliance versus total percentage of noncompliant samples. This is also explained in figure 7.

The results revealed that **51 of the 100 samples (51%) passed all the tests (administrative inspection and laboratory tests) with no non-conformities found**. The remaining 49 samples failed to meet the requirements in one, two, three or even more clauses in the standard — these 49 samples will be referred to in the report as the non-compliant samples.

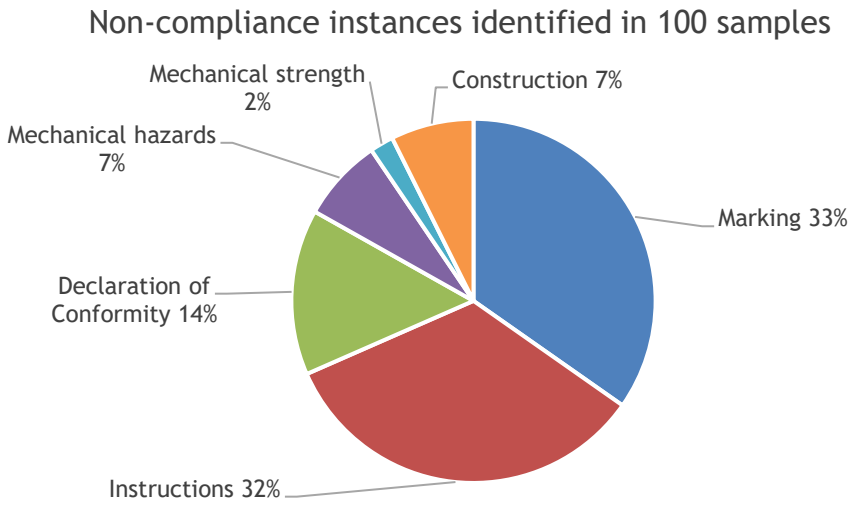

Figure 6: Non-compliance instances in the 100 samples regarding safety requirements from EN 60745

Figure 7 below shows the number of failed clauses per sample.

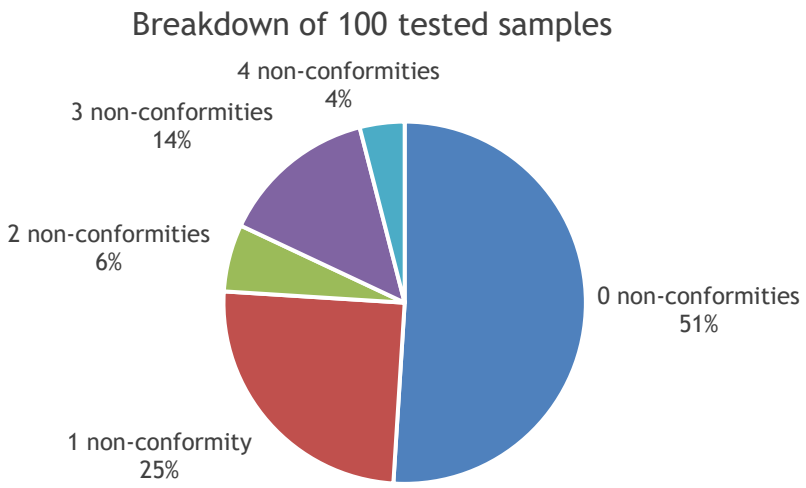

Figure 7: Share of impact drills that passed all tests or that failed to comply with one, two, three or more clauses

Figure 8 below presents the same overview in a histogram (ftp = "fail to pass").

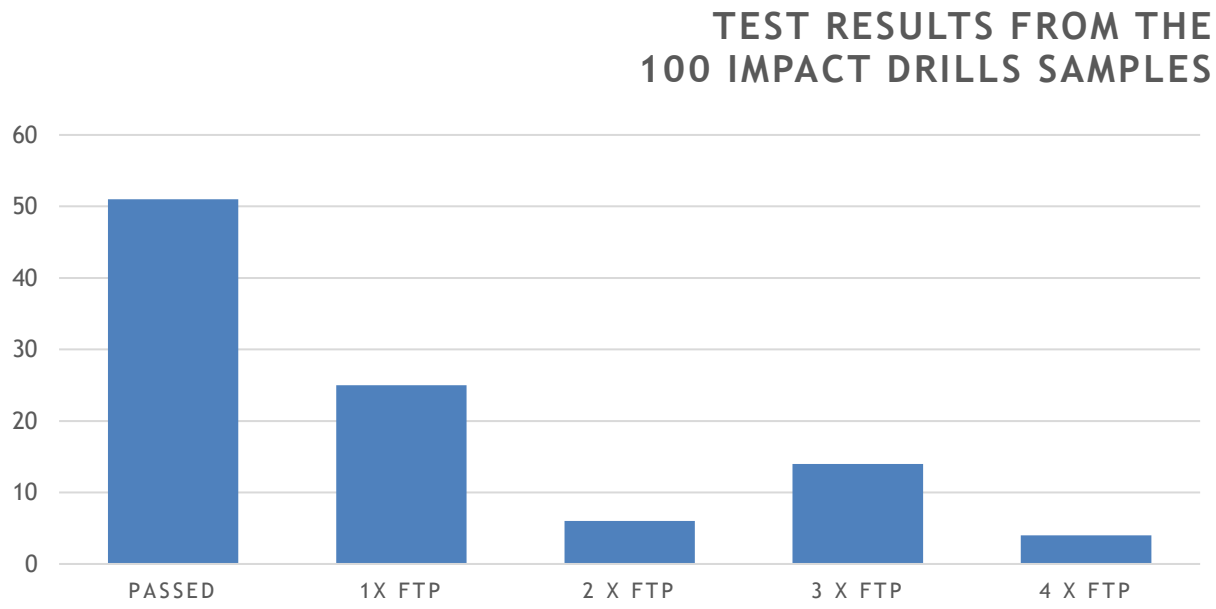

Figure 8: The number of samples that either passed or failed in one, two, three or four clauses in the standard

Table 4 below provides an overview of the clauses of the standard and the number of samples that failed to meet them.

Furthermore, table 4 shows the distinction between non-conformities related to administrative requirements (i.e. markings, warnings and instructions) and technical requirements. Non-conformities linked to administrative requirements appear to be the most common ones with errors in "markings on the tool plate" (17 samples) and "instructions and safety warnings" (40 samples) on top. All in all, this type of administrative non-conformities accounts for **58** of the identified non-conformities while **16** of the cases correspond to technical requirements. The related risk levels are analysed in Chapter 4.

Sub-clause EN 60745-1: 2009+A11:2010 EN 60745-2-1:2010	Verdict item	Adm./Tech.	Failing items
8.1	Marking sign M002	Adm.	17
8.6	Missing symbol class II	Adm.	1
8.12	Instruction manual, safety warnings	Adm.	40
19.1	Mechanical hazards – Chuck key	Tech.	3
19.101	Mechanical hazards - Stalling torque	Tech.	4
20.3	Mechanical strength – Dropping test	Tech.	2
21.18.1.1	Construction - Lock-on device	Tech.	7
	Total		**74**

Table 4: Overview of clauses in the standard the products failed to meet

Below is a list of the most frequent types of non-conformities identified in the administrative checks grouped according to the clauses of Part 1 and 2 of the standard. Please note that each of the below groups may comprise several requirements from the two parts of the standard.

- Clause 8.1 "Markings":
  - Year of manufacture missing on the marking plate;
  - Wrong indication of the sign “read instruction manual”, the sign M002 from the ISO 7010 standard must be used;
  - Missing designation of the tool;
  - No mention of the rated tool input in watts or the rated current in amperes;
  - The rated no-load speed of the tool output spindle missing;
  - Name and address of the manufacturer or responsible agent not indicated.
- Clause 8.12 "Instructions":
  - Poor translation of the instructions;
  - Missing, incomplete or erroneous operating instructions;
  - Missing safety warnings compared to requirements in EN 60745, Part 1 and 2.

Non-compliances in warnings and instructions prescribed in EN 60745 part 2 are generally considered to be the most critical administrative non-conformities as they address health and safety risks specifically related to the operation of the impact drill.

3.3 Additional Inspections

3.3.1 Declaration of Conformity (DoC)

In order to reduce cost of testing, all participating MSAs performed the entire administrative market surveillance (inspection of warnings, markings, CE marking, user instructions and Declaration of conformity) for all samples.

The checklist prepared to support the sampling process and the administrative market surveillance also contained a section related to the inspection of the DoC, including details on the requirements of the DoC as laid down in the Machinery Directive 2006/42/EC annex II-1A. The results of the inspections are presented in Table 5 — “n.a.” stands for "not applicable".

Overall, the examination of the DoC showed that:

- **5** of the sampled impact drills were not accompanied with the DoC;
- **In 4 declarations** the name and address of the person authorised to compile the technical file was either missing or incomplete (item 2);
- **1** product had a DoC which listed the incorrect Standard EN 60745-2-11:2010;
- The relevant standards (EN IEC 60745-1 and -2-1) had been referenced correctly, which suffices

to give presumption of conformity with the essential health and safety requirements of the Machinery Directive, Annex I (item 7 and 8).

Missing information for "Name and address of the person authorised to compile the technical file" is the most critical non-compliance as it makes it impossible for an MSA to access the technical file. Economic Operators are obliged to assist the authorities in the traceability process by providing a complete DoC, but if the required information under item 9 and 10 is also missing or is incomplete it becomes impossible for the MSA to trace the responsible person and thus carry out their task.

Item no.	Requirement: The declaration of conformity shall include …	Missing
1	… business name and full address of the manufacturer and, where appropriate, his authorised representative.	-
2	… name and address of the person authorised to compile the technical file, who must be established in the Community	4
3	… description and identification of the machinery, including generic denomination, function, model, type, serial number and commercial name.	-
4	… a sentence expressly declaring that the machinery fulfils all the relevant provisions of this Directive and, where appropriate, a similar sentence declaring the conformity with other Directives and/or relevant provisions with which the machinery complies. These references must be those of the texts published in the Official Journal of the European Union.	1
5	… where appropriate, the name, address and identification number of the notified body which carried out the EC type-examination referred to in Annex IX and the number of the EC type-examination certificate.	n.a.
6	… where appropriate, the name, address and identification number of the notified body which approved the full quality assurance system referred to in Annex X.	n.a.
7	… where appropriate, a reference to the harmonised standards used, as referred to in Article 7(2).	-
8	… where appropriate, the reference to other technical standards and specifications used.	1
9	… the place and date of the declaration.	2
10	… the identity and signature of the person empowered to draw up the declaration on behalf of the manufacturer or his authorised representative.	1

Table 5: Requirements declaration of conformity and results from sample-document examination

3.3.2 Price class and non-conformities

During the sampling phase the prices of the samples were noted in the forms used to record information about the product, the economic operator, the inspector, the year of manufacture and pictures of the product. This enabled the distribution of samples in price classes (please refer to Chapter 2.2.1 and Figure 4). The working group investigated whether a relation between price and safety could be established and also found out there was not significant difference in detected shortcoming between products manufactured within and outside the EU (i.e. number or severity of non-conformities found during testing and examination).

3.4 Results

The main conclusions from the test programme and the additional investigations are the following:

- **51 of 100** samples taken from the market (51%) passed all the tests and examinations;
- Out of the 49 samples that were deemed non-compliant, **45 failed** to pass one, two or three clauses of the standard. The four additional our samples failed on four clauses;
- **47 of the 49** non-compliant samples showed a substantial number of non-conformities in the administrative clauses (i.e. the clauses on warnings and instructions). Furthermore, 14 samples failed to meet some of the technical requirements, in some cases with more than one non-conformity per sample;
- Although the standards (Part 1 and 2) provide the exact wording for safety warnings and instructions, a large number of samples failed to meet the requirements;
- The marking plate is normally present on the tool, but often incomplete in spite of the fact that the standards clearly specify the obligatory information;
- The most predominant technical non-conformity is the failure to comply with the requirements of the Construction – Lock on device (**7 out of the 49** non-compliant samples);
- **5** models had no DoC. The most common non-conformity identified was the lack of name and address of the person authorised to compile the technical file, who must be established in the Community (4 cases or 4% of the samples).

4 Risk Assessment & Actions Taken

Once the test results were available, the project group carried out a risk assessment to determine the level of risk the identified non-conformities would pose to consumers/end-users. The purpose of the risk assessment is to ensure that the follow-up actions decided by the authorities are proportional to the risk involved by the non-compliant products, in accordance with the applicable EU rules on market surveillance.

4.1 The Risk Assessment (RA) Method

During the Risk Assessment Seminar 2017 and the Risk Assessment Meeting organised on 9th of November of 2017, the Activity leader together with the Activity Coordinator presented **4 different RA draft templates** based upon the EC's on-line Risk Assessment Guidelines[10] (RAG) and developed specifically for various hazards related to the usage of impact drills:

- Mechanical hazards – Chuck key;
- Mechanical hazards - Stalling torque;
- Mechanical strength – Dropping test;
- Construction - Lock-on device.

The same hazards were also detected later through laboratory tests. The RA draft templates were developed in order to facilitate and speed up the risk assessment process planned for the Work Package 3 meeting held in the laboratory after the testing. During this meeting the MSAs representatives, DG JUST and PROSAFE, together with representatives of the testing facility, reviewed and evaluated the test results. Following the outcome of the testing and the explanations provided by the experts, the project working group revised and finalised the RA templates for the 4 pre-developed hazard scenarios with the aim of harmonising as much as possible the approach to RA.

[10] European Commission's Risk Assessment Guidelines tool: http://ec.europa.eu/consumers/consumer-safety/rag/public

MSAs were then to revise the RA templates with their national peers and to take the necessary actions accordingly.
All the developed tools, templates, guidelines, and e-learning modules are accessible from PROSAFE's web portal under the newly introduced RA web Hub and e-Library.

4.2 The Risk Assessment Results

The participating MSAs assessed the risks presented by all the identified non-compliances using the on-line methodology outlined above. The conclusion for Power Tools 3 - Impact Drills shows that 6 products (6%) carried a medium to serious risk.

Sub Sub-clause EN 60745-1 :2009+A11 :2010 EN 60745-2-1 :2010	Verdict item	Number of samples	Possible RA results
8.1	Marking sign M002	17	L
8.6	Missing symbol class II	1	L
8.12	Instruction manual safety warnings	40	L
19.1	Mechanical hazards - Chuck key	3	L
19.101	Mechanical hazards - Stalling torque	4	M
20.3	Mechanical strength - Dropping test	2	S
21.18.1.1	Construction - Lock-on device	12	L

Table 6: Risk level associated with the identified non-compliances (all 100 samples)

Figure 9 shows the outcome from the drop test. The plastic body of the impact drill fragmented to such an extent that access to live parts was possible with finger probe. The 2 impact drills that failed the drop test must be considered unsafe.

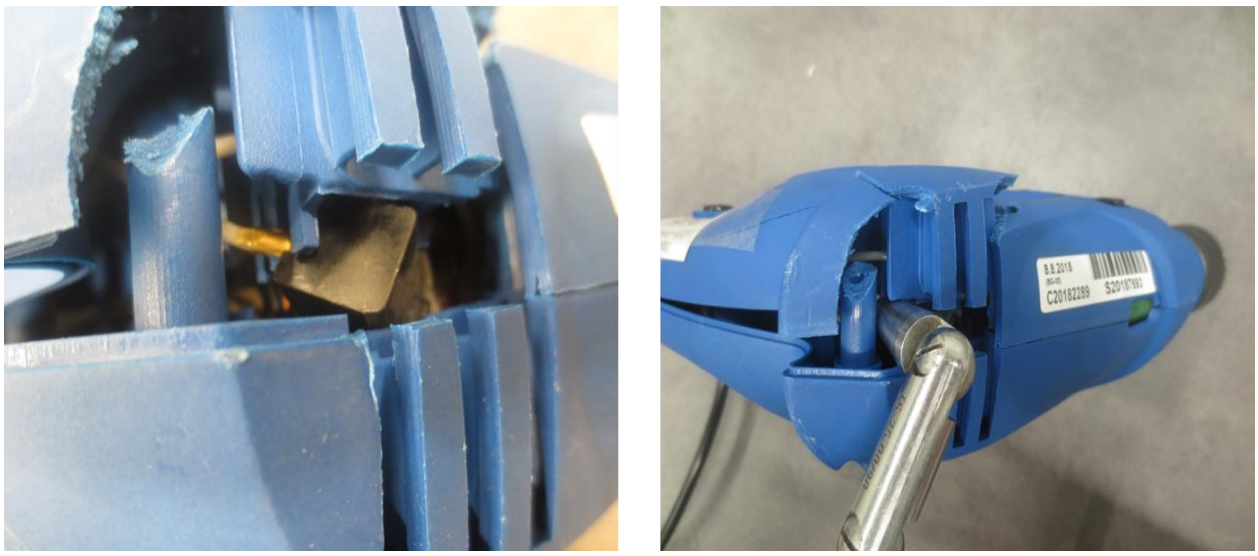

Figure 9 Outcome of the drop test

4.3 Follow-up actions and Measures taken

The risk level is a key indicator when deciding on enforcement measures against non-compliant products. For products with several non-conformities, the non-conformity with the highest risk level will be considered as the "leading" one in the final assessment.

After consideration of the RA and consultation with the concerning Economic Operators, the participating MSAs determined the measures to be taken to correct the non-conformities noted during the testing. Said measures may be taken voluntarily or imposed by the authority in accordance with Regulation EC 765/2008[11] and are defined as follows:

Sales ban:	The product is prohibited from sale permanently or until certain conditions are met.
Withdrawal:	The distribution, display and/or offer of a product dangerous to consumers is stopped.
Recall:	Measures aimed at achieving a return of a product that has already been supplied or made available to consumers are taken.

Action was taken in **49 cases** (1 with serious risk, 4 with medium risk and the remaining instances with low risk). In most of the cases, the economic operator took voluntary the measures proposed by the authority — Table 7 provides an overview of the measures taken.

Two impact drills failed to comply with the standard requirement for Clause 20.3 Mechanical strength – Dropping test. One of the two impact drills had been sampled by the participating MSA from Bavaria. They contacted the manufacturer and informed them about the test results. In response, the manufacturer declared that the product was no longer being distributed and that there was no risk of an electric shock because the electrical line had a basic insulation. Furthermore, the manufacturer's counter-testing at another laboratory showed three samples passing successfully the drop test (dropped 3 times on concrete surface from 1 m). The case was then closed without any imposed measures, i.e. withdrawal from the market, recall or RAPEX notification.

In conclusion, one single RAPEX notification was issued for a serious risk.

Furthermore, Table 7 lists the measure "Product information voluntary completed by EO". It covers the cases where information was missing (partly or completely) from the marking of the tool, the safety warnings or the instructions in the manual. These cases were corrected by the concerning economic operators. The risk for the majority of these cases is low.

The heading "Other" includes:

- Cases with very minor non-conformities like omission of one piece of information from the marking of the tool without practical risk for the user, e.g. rated voltage, rated power or year of manufacture;
- Cases with mechanical hazards according to clause 19.1 (see Table 6) with low risk where the discussion with the economic operators prompted a re-testing of the product or where the economic operator took measures;
- Cases where the manufacturing and sales of the product have stopped, perhaps because an old model was sampled. In these cases, measures were only taken for items on stock.

[11] Regulation (EC) No 765/2008 of the European Parliament and of the Council of 9 July 2008 setting out the requirements for accreditation and market surveillance relating to the marketing of products and repealing Regulation (EEC) No 339/93 *OJ L 218, 13.8.2008, p. 30-47*

RISK BASED FOLLOW-UP ON NON-COMPLIANT IMPACT DRILLS IN MEMBER STATES

A_Voluntary market surveillance measures	Risk Level	MS's totals
A1 Sales ban and/or withdrawal from the market	S H M	 3 3
A2 Sales ban and/or withdrawal from the market and recall from consumers	S H M	
A3 Product information voluntary completed by EO	M L	 23
A4 Others (manufacturing had stopped, manufacturer provided evidence that the authority was wrong, etc.)):	L	2
B_Mandatory market surveillance measures		
B1 Sales ban and/or withdrawal from market	S H M	 2
B2_ Sales ban and/or withdrawal from the market and recall from consumers	S H M	
B3 Product information mandatory completed by EO	M L	 5
B4 Others (to define beneath):		
C_Measures (diverse)		
C1 Minor non-conformities	M L	 2
C2 Production brand/model has stopped	S H M	 2
C3 Others:	M L	2
Production brand/model no longer on the market (stopped production) D Cases still pending	 L M	4 3 1

Table 7: Overview of measures taken against non-compliant impact drills

4.4 RAPEX and ICSMS

Where appropriate, in order to enable the authorities of the other Member States to take appropriate corrective action on their markets, the authorities participating in the JA2016 Power Tools 3 activity sent notifications about the measures taken with respect to unsafe products using the European Commission's Rapid Alert System for dangerous non-food products 'Safety Gate' (RAPEX)[12].

Table 8 shows the statistics regarding the RAPEX notifications and the registrations in ICSMS. Regarding

[12] Commission Decision 2010/15/EU of 16 December 2009 laying down guidelines for the management of the Community Rapid Information System "RAPEX" established under Article 12 and of the notification procedure established under Article 11 of Directive 2001/95/EC (the General Product Safety Directive)" Published in the Official Journal of the European Union L22/1: https://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2010:022:0001:0064:EN:PDF

the one RAPEX notifications in Table 8, participating MSA followed the procedure in Regulation EC 765/2008 and in the RAPEX guideline.

RAPEX NOTIFICATIONS AND ICMS REGISTRATIONS FOR NON-COMPLIANT IMPACT DRILLS		
All risks specified:	S M L	2 4 33
All measures taken (total):		45
E Notifications to RAPEX (EC765/2008 Art. 22 and 23)		
E1 Notifications to RAPEX – serious risk (Regulation 765/2008)	S	1
F ICSMS reported		44

Table 8: Statistics for RAPEX notifications and ICSMS registration

The two cases posing a serious risk to consumer are both related to the impact drills that failed in the drop test (clause 20.3).

5 Liaisons

As per previous activities on Power Tools, the MSAs wanted to involve as many stakeholders as possible. Open sessions for external stakeholders were organised as follows:

Kick-off Meeting:

To discuss the goals of the Activity and any known issues with impact drills and to define the hazards for baby carriers and cots, the previously developed risk assessment templates for the most significant hazards, possible injury scenarios and likelihood of the same.

Meeting 5:

To fully present the findings from this project apart from the communication of relative findings.

Detailed feedback concerning the standard was also conveyed to the relevant CEN Working Group - CLC/TC 116 (Safety of motor-operated electric tools). A point in case was related to Article 24.14 of Part 1 (external flexible chord longitudinal displacement from anchorage) where a sampled product used a labyrinth anchoring set up, which is accepted. While the initial test as described in the standard resulted in a failure subsequent testing showed no further signs of extension. This was due to the initial tension of the wire in the anchorage. The T/C 116 representative took this on board to further discuss it in the technical committee of the respective standard.

The following stakeholders actively participated in these meetings:

- **ANEC:**

ANEC is the European consumer voice in standardisation. Their membership is open to representatives of national consumer organisations from 33 countries (EU, EFTA and Accession Countries);

- **EPTA:**

The European Power Tools Association (EPTA) represents the power tool manufacturers active in Europe. It's an association with four main tasks:

  - Information and transparency towards the public;
  - Information and support of the legislative authorities by means of professional expertise;
  - Development and implementation of industry-wide standards;
  - Promotion of fair competition.

- **CEN:**

More than 50,000 technical experts from industry, associations, public administrations, academia and societal organizations are involved in the CEN network – allowing for a reach of over 600 million people.

33 National Standardisation Bodies make up the CEN membership and represent CEN in their countries, besides several other affiliates such as the specific CEN Working Group Technical Committees responsible for the provision of EN standards for the products examined under JA2016 (CLC/TC 116 (Safety of motor-operated electric tools), as reported above).

5.1 Other Liaisons

The Power Tools 3- Impact Drills Activity maintained close links with DG JUST, which participated in all the Activity meetings. This ensured that the EC was fully involved and up-to-date with the activity at all times, whilst ensuring that information was able to be shared quickly amongst the MSAs and DG JUST as and when necessary.

6 Evaluation, Lessons Learned

6.1 Internal

The multiple Joint Actions provide an added value in many different ways. With participant EU Member States working together, the product Work Packages reflect a truly pan-European survey of the marketplace. Moreover, the Joint Actions deliver economies of scale driving down unit test costs helping to stretch the limited resources.

The product Work Packages within the Joint Actions also provide a platform for sharing expertise and the spread of best practice. All in all, the Joint Actions make a significant contribution to achieving a high level of consumer protection and a level playing field for all economic operators throughout Europe together with a harmonised approach for Market Surveillance in general.

6.2 Lessons Learned

Overall, it can be concluded that the project has achieved its objectives. In particular, work 'to ensure that impact drills are safe in use' has resulted in detailed feedback to the relevant standards committees.

We can again conclude that:

- Lessons learned on previous Power tools JAs were applied saving time during the planning, sampling and tendering processes;
- Joint testing of products enabled the MSAs involved to examine a large quantity of impact drills and to take measures on many products across the EU;
- Economic Operators need to have increased focus upon the warnings, markings and instructions of these products;
- Input from stakeholders is extremely valuable as maintaining a healthy dialogue between all stakeholders helps identify and prevent possible future safety issues and at the same time recognize practical solutions.

6.3 Other lessons learned

It is important to recall that the Machinery Directive does not exclude unskilled manipulators like consumers and DIY users from its definition of an "operator". On the contrary, the directive says:

"Where a machine (e.g. power tool) may be used by a consumer, that is to say, a non-professional operator, the manufacturer should take account of this in the design and construction".

Therefore, the economic operators must be made aware of the importance of the required instructions and safety warnings in the instruction manual in order to reduce the remaining risks for non-professional operators. This is particularly relevant for popular electric handheld tools like impact drills, where professional products have migrated during the last decades into the consumer market, leading to a new series of hazards and risks for the general consumer. JA2016 Power tools urges that further market surveillance activities are undertaken in the future given the high number of products with missing or incomplete warnings or instructions found in this activity.

6.4 Looking Ahead

In Chapter 3.4 the results from testing and examinations of 100 samples are given. While more than half of the samples (53%) passed all tests and examinations, there were several reasons behind the relative high degree of failure. The most important one appeared to be a lack of essential information in the instructions for use and the safety warnings (65% of all the non-conformities).

Finally, the participating MSAs felt it was important that the good work undertaken on JA2016 Power Tools 3 was not simply forgotten after the end of the Activity. As a consequence, the Authorities who took part plan to continue their work as follows:

- Finalising those still pending/on-going cases;
- Dialogue with CEN working group CLC/TC 116 (Safety of motor-operated electric tools) will continue beyond the end of the Activity (if further support is required);
- MSAs will persevere in the monitoring of impact drills within their markets in order to reduce administrative non-conformities to acceptable levels.

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Annex I Checklists - 'Impact Drills' (Product Activity Power Tools 3)

Checklists - 'Impact Drills' (Product Activity Power Tools 3)					
Markings, user instructions, Declaration of conformity - MD 2006/42/EC, EN 60745-1:2009, EN 60745-2-1:2010					
	Ref	**Yes**	**No**	**N.A.**	**Doubt**
Checklist for markings					
the business name and address of the manufacturer and, where applicable, his authorised representative. Any address shall be sufficient to ensure contact. Country or state, city and postal code (if any) are deemed sufficient for this purpose	1.7.3.				
designation of the tool, designation of the tool may be achieved by a code that is any combination of letters, numbers or symbols, providing that this code is explained by giving the explicit designation such as "drill", etc. in the instructions supplied with the tool	1.7.3.				
the CE Marking (according to Annex III of MD 2006/42/EC)	1.7.3.				
designation of series or type, allowing the technical identification of the product. This may be achieved by a combination of letters and/or numbers and may be combined with the designation of tool	1.7.3.				
serial number, if any	1.7.3.				
the year of manufacture and a date code identifying at least the month of manufacture	1.7.3.				
Tools shall be marked with rating information as follows	8.1				
rated voltage(s) or rated voltage range, in volts. Tools for star-delta connection shall be clearly marked with the two rated voltages (for example 230 Δ/ 400 Y).					
symbol for nature of supply, unless the rated frequency is marked. The symbol for nature of supply shall be placed next to the marking for rated voltage					
rated input in watts or rated current in amperes. The rated input or current to be marked on the tool is the total maximum input or current that can be on circuit at the same time. If a tool has alternative components which can be selected by a control device, the rated input or rated current is that corresponding to the highest loading possible;					
name or trade mark or identification mark and address of the manufacturer or any other agent responsible for placing the tool on the market	8.1, 1.7.3				
model or type reference	8.1, 1.7.3				
symbol for class II construction, for class II tools only;					

IP number according to degree of protection against ingress of water other than IPX0. If the first numeral for the IP numbering is omitted, the omitted numeral shall be replaced by the letter X, for example IPX5					
"WARNING – To reduce the risk of injury, user must read instruction manual" or the sign M002 of ISO 7010  If used, the word "WARNING" shall be in capital letters not less than 2,4 mm high and shall not be separated from the cautionary statement. If used, the statement shall be verbatim except the term "operator's manual" or "user guide" may be used for the term "instruction manual".					
Additional markings are allowed, provided they do not give rise to misunderstanding					
Regulating devices and the like, intended to be adjusted during operation, shall be provided with an indication for the direction of adjustment to increase or to decrease the value of the characteristic being adjusted. An indication of + and – is considered to be sufficient. The requirement does not apply to regulating devices provided with an adjusting means, if its fully "on" position is opposite to its "off" position. If figures are used for indicating the different positions, the "off" position shall be indicated by the figure ⓔ and the other positions shall be indicated by figures reflecting the greater output, input, speed, etc. The indication for the different positions of the operating means of a control device need not to be placed on the device itself.	8.11				
Drills and impact drills shall be marked with the following	8.1				
rated no-load speed in revolutions per	EN 60745-2-1:2010				
maximum capacity, in millimetres, of the chuck					
Checklist for user instructions					
All machinery must be accompanied by instructions in the official Community language or languages of the Member State in which it is placed on the market and/or put into service.	1.7.4				
The instructions accompanying the machinery must be either 'Original instructions' or a 'Translation of the original instructions', in which case the translation must be accompanied by the original instructions.	1.7.4				

An instruction manual and safety instructions shall be provided with the tool and packaged in such a way that is noticed by the user when the tool is removed from the packaging. The safety instructions may be separate from the instruction manual. An explanation of the symbols required by this standard shall be provided in either the instruction manual or the safety instructions.	8.12				
They shall be **written in the official language(s) of the country in which the tool is sold**. They shall be legible and contrast with the background. They shall include the name and address of the manufacturer or supplier or any other agent responsible for placing the tool on the market.					
General Power Tool Safety Warnings	8.12.1.1				
⚠ **WARNING Read all safety warnings and all instructions.** Failure to follow the warnings and instructions may result in electric shock, fire and/or serious injury.					
Save all warnings and instructions for future reference.					
The term "power tool" in the warnings refers to your mains-operated (corded) power tool or battery-operated (cordless) power tool.					
1) Work area safety					
a) **Keep work area clean and well lit.** Cluttered or dark areas invite accidents.					
b) **Do not operate power tools in explosive atmospheres, such as in the presence of flammable liquids, gases or dust.** Power tools create sparks which may ignite the dust or fumes.					
c) **Keep children and bystanders away while operating a power tool.** Distractions can cause you to lose control.					
2) Electrical safety					
a) **Power tool plugs must match the outlet. Never modify the plug in any way. Do not use any adapter plugs with earthed (grounded) power tools.** Unmodified plugs and matching outlets will reduce risk of electric shock.					
b) **Avoid body contact with earthed or grounded surfaces, such as pipes, radiators, ranges and refrigerators.** There is an increased risk of electric shock if your body is earthed or grounded.					
c) **Do not expose power tools to rain or wet conditions.** Water entering a power tool will increase the risk of electric shock.					
d) **Do not abuse the cord. Never use the cord for carrying, pulling or unplugging the power tool. Keep cord away from heat, oil, sharp edges or moving parts.** Damaged or entangled cords increase the risk of electric shock.					

e) When operating a power tool outdoors, use an extension cord suitable for outdoor use. **Use of a cord suitable for outdoor use reduces the risk of electric shock.**					
f) **If operating a power tool in a damp location is unavoidable, use a residual current device (RCD) protected supply.** Use of an RCD reduces the risk of electric shock.					
3) Personal safety					
a) **Stay alert, watch what you are doing and use common sense when operating a power tool. Do not use a power tool while you are tired or under the influence of drugs, alcohol or medication.** A moment of inattention while operating power tools may result in serious personal injury.					
b) **Use personal protective equipment. Always wear eye protection.** Protective equipment such as a dust mask, non-skid safety shoes, hard hat or hearing protection used for appropriate conditions will reduce personal injuries.					
c) **Prevent unintentional starting. Ensure the switch is in the off-position before connecting to power source and/or battery pack, picking up or carrying the tool.** Carrying power tools with your finger on the switch or energising power tools that have the switch on invites accidents.					
d) **Remove any adjusting key or wrench before turning the power tool on.** A wrench or a key left attached to a rotating part of the power tool may result in personal injury.					
e) **Do not overreach. Keep proper footing and balance at all times.** This enables better control of the power tool in unexpected situations.					
f) **Dress properly. Do not wear loose clothing or jewellery. Keep your hair and clothing away from moving parts.** Loose clothes, jewellery or long hair can be caught in moving parts.					
g) **If devices are provided for the connection of dust extraction and collection facilities, ensure these are connected and properly used.** Use of dust collection can reduce dust-related hazards.					
Wear ear protectors when impact drilling. Exposure to noise can cause hearing loss	8.12.1.1				
Use auxiliary handle(s), if supplied with the tool. Loss of control can cause personal injury.	8.12.1.1				
Hold power tool by insulated gripping surfaces, when performing an operation where the cutting accessory may contact hidden wiring or its own cord. Cutting accessory contacting a "live" wire may make exposed metal parts of the power tool "live" and could give the operator an electric shock.	8.12.1.1				
4) Power tool use and care					

a) **Do not force the power tool. Use the correct power tool for your application.** The correct power tool will do the job better and safer at the rate for which it was designed.					
b) **Do not use the power tool if the switch does not turn it on and off.** Any power tool that cannot be controlled with the switch is dangerous and must be repaired.					
c) **Disconnect the plug from the power source and/or remove the battery pack, if detachable, from the power tool before making any adjustments, changing accessories, or storing power tools.** Such preventive safety measures reduce the risk of starting the power tool accidentally.					
d) **Store idle power tools out of the reach of children and do not allow persons unfamiliar with the power tool or these instructions to operate the power tool.** Power tools are dangerous in the hands of untrained users.					
e) **Maintain power tools and accessories. Check for misalignment or binding of moving parts, breakage of parts and any other condition that may affect the power tool's operation. If damaged, have the power tool repaired before use.** Many accidents are caused by poorly maintained power tools.					
f) **Keep cutting tools sharp and clean.** Properly maintained cutting tools with sharp cutting edges are less likely to bind and are easier to control.					
g) **Use the power tool, accessories and tool bits etc. in accordance with these instructions, taking into account the working conditions and the work to be performed.** Use of the power tool for operations different from those intended could result in a hazardous situation.					
5) Service					
a) **Have your power tool serviced by a qualified repair person using only identical replacement parts.** This will ensure that the safety of the power tool is maintained.					
If the safety instructions are separate from the instruction manual, then the following warnings shall be included in the instruction manual. These warnings, if in English, shall be verbatim and in any other official language to be equivalent.	8.12.2				
⚠ **WARNING Read all safety warnings, and all instructions.** Failure to the warnings and instructions may result electric shock, fire and/or serious injury. **Save all warnings and instructions for future reference.**					
The instruction manual shall be provided with the following, if appropriate.	8.12.2				
b) Operating instructions					
1) Setting and testing;					

2) Tool changing;					
3) Clamping of the workpiece;					
4) Limits on size of workpiece and type of material;					
5) General instructions for use;					
c) Maintenance and servicing instructions					
1) Regular cleaning, maintenance, method for keeping tools sharp, and lubrication;					
2) Servicing by manufacturer or agent; list of addresses;					
3) List of user-replaceable parts;					
4) Special tools which may be required;					
5) For power tools with type **X attachment,** where a specially prepared cord is needed to replace the cord: if the supply cord of this power tool is damaged, it must be replaced by a specially prepared cord available through the service organization.					
6) For power tools with type **Y attachment**: if the replacement of the supply cord is necessary, this has to be done by the manufacturer or his agent in order to avoid a safety hazard.					
7) For power tools with type **Z attachment**: the supply cord of this power tool cannot be replaced, and the power tool shall be scrapped.					
Check-list for EC declaration of conformity (Machinery Directive Annex II-1A):					
1. business name and full address of the manufacturer and, where appropriate, his authorised representative;					
2. name and address of the person authorised to compile the technical file, who must be established in the Community;					
3. description and identification of the machinery, including generic denomination, function, model, type, serial number and commercial name;					
4. a sentence expressly declaring that the machinery fulfils all the relevant provisions of this Directive and where appropriate, a similar sentence declaring the conformity with other Directives and/or relevant provisions with which the machinery complies. These references must be those of the texts published in the Official Journal of the European Union;					
7. where appropriate, a reference to the harmonised standards used, as referred to in Article 7(2);					
8. where appropriate, the reference to other technical standards and specifications used;					
9. the place and date of the declaration;					
10. the identity and signature of the person empowered to draw up the declaration on behalf of the manufacturer or his authorised representative.					