

Newsletter

December 2008

First trade fair presence of oSa: a complete success

oSa made a name for itself at the Practical World Trade Fair

From 9 to 12 March 2008 the biggest trade fair for power tools, the Practical World Trade Fair/Eisenwarenmesse, was again held in Cologne. The oSa was for the first time represented with its own booth. And it was a complete success. A success for our safety organisation and for safe abrasive tools.

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Editorial



Dear oSa – Newsletter readers!

The current crisis on the financial markets shows the chaos unsafe products can cause. However, unsafe financial products do not endanger human lives – the situation is different with abrasive tools.

Severe injuries, sometimes even with fatal consequences, can be caused by abrasive wheels which do not comply with the requirements of the safety standards. Thankfully, in most cases the accident investigation reveals misuse of the product, incorrect product selection or malpractice such as removal of the guard. oSa-products cannot prevent such conscious misuse, but they offer a well-known high and verifiable safety level. For thin wheels the single point and three point side load as well as impact test are carried out. Each oSa-member who manufactures thin wheels has assumed the obligation to implement these in-process tests. The two first mentioned tests constitute the focus topic of this newsletter. And it is a good feeling to know that wheels burst under controlled conditions during inspection at the manufacturer instead of during the application process at work.

For sure!

Pierre Balian
oSa-President

oSa® – The Symbol of Safety

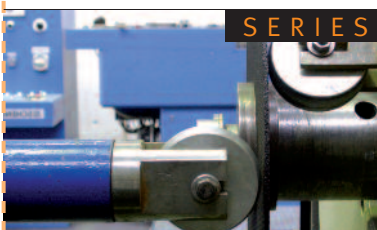
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Testing at the manufacturer - Side load test

The side forces to which an abrasive wheel can be subjected to in use can be enormous. Those manufacturers who are oSa-members carry out regular tests for sufficient safety of their products. ► [Read more on page 2](#)



Manufacturers of thin wheels

Resin-bond wheels for hand-held applications have become indispensable in trade. All 24 oSa-members producing thin wheels provide the highest levels of safety in their thin wheels.

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First trade fair presence of oSa: a complete success ▶ Continued from page 1

Hundreds of contacts at our well-frequented booth clearly show the growing global importance of our organisation. Importers, traders and users from Europe, Asia and America didn't pose the question "What is oSa?" but "Where can I buy oSa-products?"

At the oSa-press conference under the slogan "Product Piracy cuts Safety", held on the premises of the fair, oSa-representatives and Willo Lai of Pinkerton Consulting Services Shanghai pointed out that original technology – abrasives with the oSa-ologo – pays because it protects users' health. And not least by cooperating with Pinkerton Consulting, oSa successfully traces and actively fights against the counterfeiting of abrasive products of oSa-members, of their brands and of the oSa®-trademark world-wide.

The management of the Practical World Trade Fair now actively fights against product counterfeits with its initiative "No copy! Originals only!". Exhibitors which do not abide by the international regulations, must vacate their fair booth, at the very least the counterfeits will be confiscated. However, counterfeited oSa®-products were not detected at the trade fair.

Traditionally hand-held abrasives are at the focus of the Practical World Trade Fair, which would be unthinkable without resinoid grinding and cut-off wheels as well as diamond saws.

The global market of these abrasives is estimated at about 1,5 billion EURO. Numerous oSa-members displayed their latest products and by doing so also advertised our oSa-safety logo.

SERIES TESTING AT THE MANUFACTURER

Part 3: Side load test

This EN-compliant test method for abrasive products is applied by oSa-members

Having outlined the burst speed testing and segment bending tests in our previous newsletters, we would like to show in this edition how the resistance of an abrasive wheel to side forces can be measured and evaluated in a standardised test procedure.

From the above-mentioned estimated market volume of 1,5 bn. EURO, resinoid bonded abrasives for hand-held applications (ISO-type 27, 28, 29, 41 and 42) amount to about two-thirds. This means that hundreds of millions of these products are used each year, many within the DIY-market.

In view of such quantities, the demand for high product safety is well justified. Are the requirements within the standards for sufficient resistance to side load adhered to? oSa-members can answer this question with a clear conscience, as they carry out the side load tests according to the standards.

According to EN 12413:2007 a minimum side load resistance depending on wheel type,

diameter and operating speed (see table 5 of the standard) is stipulated.

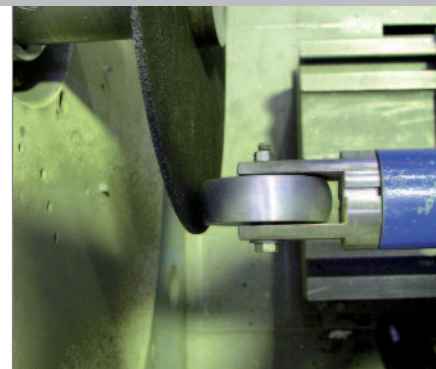
The testing of resistance to side load is based on the fact that during use very high side forces or impact can be applied to the wheel. Misuse, such as turning or jamming in the cut or "pinching" of the work on the sides of the wheel can result in wheel breakage and possible injury to the operator. But how can we simulate these real processes quickly and reliably in production?

For decades, two test methods have proven effective: the single point side load (picture 1) and three point side load test (picture 2). Single point side load tests are carried out with flat and depressed centre cutting-off wheels and depressed centre grinding wheels, and three point side load tests only with certain flat cutting-off wheels of larger diameter.

The principle is easy. The abrasive wheel rotates at its maximum operating speed. Then a pressure roll is fed at right

angles to the direction of rotation onto the side of the wheel. The force on the pressure roll is steadily increased (single point side load) until wheel breakage or up to the stipulated limit value. The procedure of the three point side load test is basically the same; here additionally the abrasive product is supported at the rear by two live back-up rolls. Thus the flexing of the abrasive tool in the cut is simulated. In both tests the load on the pressure roll in the feed direction is measured and the single point side load and three point side load respectively (picture 3) is determined. The resulting values must correspond to the requirements of the EN 12413:2007. From the damage pattern (picture 4) the expert can draw important conclusions, i.e. as regards the adhesion of the glass fibre in the matrix.

What sounds so simple has its pitfalls in real performance. How about for example the geometry of the pressure roll? The standard requires an outside diameter of the pressure roll between 70mm and 80mm.



Picture 1: single point side load



Picture 2: three point side load

But this does not mean that a wear of the pressure roll of max. 10 mm is admissible. Basic research carried out by the oSa has shown that a wear of a few mm can already lead to totally different results, because the contact parameters between roll and abrasive have changed. In order to prevent misinterpretations as regards the side load, the tests should in case of doubt always be carried out with new pressure rolls.

Side load test ▶ Continued from page 2

Equally important is the choice of material for the pressure roll. Tool steel and hardened aluminium alloys have delivered an optimal performance in practice. The pressure roll must be able to move freely without friction on contact with the abrasive. The test chamber must be of an adequate depth to allow flexing of the wheel without contact with the back wall of the chamber.

Last but not least the requirements of occupational health and safety must also be taken into consideration. The chamber must be constructed to prevent abrasive fragments that could hurt people nearby from being ejected from the chamber. The implementation of the side load test is rather noisy, not only at the moment of wheel breakage but also during the test so suitable ear protection is mandatory. Additionally, good dust extraction should be provided.

The Safety Standard EN 12413:2007 describes both test methods and gives details

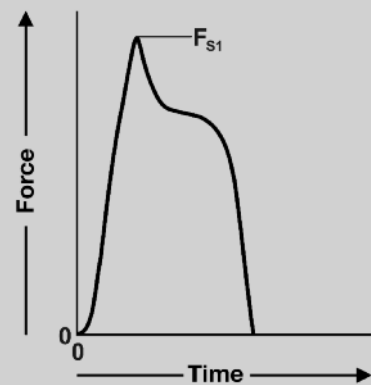
for the construction of the test machine. Thus the test results obtained on different machines are comparable. To verify this, oSa have carried out calibration tests on machines that have been constructed in-house or purchased externally against the “benchmark machine” based at the BGIA in Sankt Augustin, an independent test institute.

For this purpose, oSa-members produce a set of samples with tight production tolerances. One half is tested at the BGIA, the other at the manufacturer. The comparison of the values indicates the accuracy of the test machine at the manufacturer. In addition to these function controls and comparative tests, a regular calibration of the load cell is required.

It is evident that high costs must be incurred in obtaining the necessary equipment and conducting the tests on a regular basis and all oSa members producing these products have made this commitment.

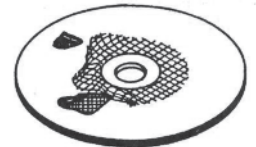
Hence, it is not surprising that an abrasive product with the oSa-trademark may not be the cheapest on the market but assured safety comes at a cost. The oSa-members pay this price. Here also applies: oSa – for sure!

oSa® – The Symbol of Safety

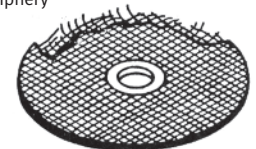


Picture 3: force versus time diagram

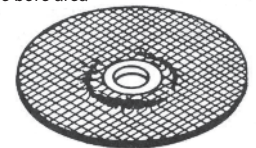
Delamination between abrasive material and cloth



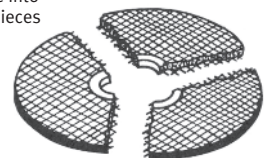
Breakage at the periphery



Breakage around the bore area



Breakage into several pieces



Picture 4: Damage patterns at side load test

MEMBER PORTRAIT

Manufacturers of thin wheels

Thin wheels are indispensable – and in matters of safety you can trust the oSa-symbol



Resin-bond wheels for hand-held applications have become indispensable in our lives. A huge range of materials can be processed easily using thin wheels.

For ferrous metals aluminium oxide is the recommended abrasive material. But also SiC is used, mainly for the processing of stone, plastics and casting material.

So-called INOX-wheels are suitable for special applications as e.g. in power station construction, because of their especially low concentration of sulphur (< 0,5%), chlorine (< 0,1%) and iron (< 0,1%).

The oSa has 24 members who manufacture these products. The production is in parts highly automated; modern presses can manufacture several thousand thin wheels per day.

Sophisticated methods ensure that each wheel has the correct composition and the required number of glass-fibre reinforcements necessary for safeguarding the required strength of the tool. And finally, ongoing tests ensure that the side load stipulated in the standard can be complied with at all times.

Correct marking of abrasives – a must for oSa-members

There are a huge range of tools in use today that are easy to operate, bear little or no marking and do not come with an instruction manual. This is the case for simple hand tools such as hammers and screwdrivers but for abrasive products the requirements are much different.

Abrasive wheels incorrectly selected or misused can be very dangerous causing serious injuries. The range of products in terms of size, shape, specification and operating requirements require explicit marking regulations.

International and European standards of abrasives therefore require that the maximum permissible operating speed (in m/s and RPM), the dimensions and any particular restrictions to its use be marked directly on the abrasive wheel. And this marking must be legible and permanent.

Unfortunately many products do not meet these requirements and therefore give rise to great safety risks. Consequently, the message from oSa to all users of abrasives is:

“Don’t use a product if its marking is illegible, incomplete or missing!”

Almost every week the oSa-headquarters receive information on insufficiently or incorrectly labelled products marked with the oSa®-logo. If these are manufactured by an oSa-member, a phone call usually helps to clarify the case and admonish the member to mark correctly in the future. If however we have to deal with a counterfeit or private label product, a lawyer will be charged. A severe infringement of oSa-regulations is the missing 5-digit private label number, as this number safeguards traceability from the user/dealer/importer back to the manufacturer. The counterfeiter will in such cases have to sign a cease and desist letter and cover the legal costs. Further possible legal steps are the destruction of the counterfeits and a compensation dependent on the turnover.

Members of oSa are totally committed to the correct marking of their products. To help members in the correct marking of abrasives, instructions for the different abrasive products will shortly be provided in the internal member section of the oSa website.

Marking of abrasives (Extract from the EN 12413:2007)

Specifications	1	2	3	4	5	6	7	8
	Manufacturer, supplier, importer, trademark	Dimensions	Specification mark	Maximum operating speed m/s	Max. permissible speed of rotation of the unused abrasive product 1/min or rpm	Declaration of conformity	Restrictions of use	Traceability code
Description of abrasive product								
Abrasive wheels (straight, tapered, hubbed, recessed, relieved, depressed centre, cutting-off wheels, semi-flexible) Cup wheels, dish and saucer wheels, disc wheels, cylinder wheels cemented or damped	X	X	X	X	X	X	X	X
Segments	X	X	X	–	–	X	–	X
Mounted wheels and points	X	X	X	–	X	X	–	X
Small diameter wheels with D ≤ 80 mm	X	X	X	X	X	X	X	X
Cones and Plugs	X	X	X	X	X	X	–	X
Abrasive products with magnesite bond	X	X	X	X	X	X	–	X

By courtesy of the publisher

TRADE FAIR DATES 2009

annually 06 – 09 March 2009	XIAMEN INTERNATIONAL STONE FAIR Xiamen, China
biannually 11 – 14 March 2009	METALL MÜNCHEN European Trade Fair for Metal Working in Industry and Trade, Munich/Germany
biannually 15 – 17 March 2010	INTERTECH International technical conference on diamond, cubic boron nitride and their applications Henderson, Nevada, USA
biannually 16 – 19 April 2009	STONEKOMPLEX Int. Exhibition of Stone, Stonemasonry, Stone Products, Tools, Machines & Technol., Nitra/Slovakia
biannually 18 – 22 May 2009	LIGNA Hanover World Trade Fair for the Forestry & Wood Industries Hanover, Germany
biannually 20 – 23 May 2009	STONE+TEC International Trade Fair Natural Stone and Stone-processing Technology, Nuremberg/Germany
annually May/June 2009	CARRARA MARMOTEC International Fair for Marble, Carrara/Italy
annually 02 – 05 October 09	MARMOMACC Int. Exhibition of Marble Stone and Technology Verona, Italy
biannually 5 – 10 October 09	EMO - Exposition Mondiale de la Machine Outil Milan, Italy

NEWS

oSa-safety philosophy

The three European Safety Standards form the basis of the oSa-safety philosophy. But there are further important standards and guidelines, which must be taken into consideration for the manufacturing of abrasives.

For instance, the EN Standards contain normative references to selected ISO Standards which become mandatory as a result. From now on, oSa will inform its members by electronic mail of additions, modifications and withdrawals of all relevant standards. Thus you can ensure your stock of standards is always up to date.

Imprint

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