

EFIBCA is the voice of the European FIBC industry.
In this issue:

LEGISLATION, STANDARDS & TECHNOLOGY

- Amendment to IEC 61340-4-4 Ed. 2.0 on the Electrostatic Classification of FIBC by Dr. Paul Holdstock

FIBC MARKET NEWS

- FIBC Import Statistics first half 2014

CONFERENCE REVIEW

- EFIBCA UV Workshop

INTERNAL NEWS

- New EFIBCA members

UPCOMING EVENTS

- Preview EFIBCA AGM and Open Meeting, Fall 2015
- FIBC Calendar

LEGISLATION, STANDARDS & TECHNOLOGY

Amendment to IEC 61340-4-4 Ed. 2.0 on the Electrostatic Classification of FIBC

By Dr Paul Holdstock

Introduction

The International Electrotechnical Commission (IEC) develops international consensus standards, operating under the same Directives as ISO, but focussed on electrical, electronic and electrostatic technologies. In 2005, the IEC Technical Committee on Electrostatics (TC 101), in co-operation with the ISO Technical Committee on Packaging (TC 122/SC 3), published the first edition of IEC 61340-4-4 on Electrostatic Classification of FIBC [1]. Although electrostatic properties of FIBC had been addressed in other standards and codes of practice, IEC 61340-4-4 was the first standard to specifically address this subject.

EFIBCA Open Meeting 2015



on 30 September 2015 in Barcelona, Spain!

EFIBCA is proud to announce its fifth Open Meeting on **Wednesday, 30 September 2015** at the Pullman Barcelona Skipper Hotel.

The EFIBCA Open Meeting is the perfect platform for exchange and networking across the FIBC industry. Various expert speakers will bring you up to date on a broad variety of business aspects, ranging from the FIBC market over sustainability to quality and safety management.

More information to follow soon on www.efibca.com.

A scheme to classify FIBC as Type A, B or C was first proposed by Maurer *et al* [2] and codes of practice such as CLC R044-001 [3] gave basic guidance on the use of these three types, with some hints on testing. By the mid-1990's, the market for static protective FIBC was well established, and new technologies had been introduced in the form of static protective FIBC that do not require earthing, which we now know as Type D. In 2003, CLC R044-001 was updated and published as CLC/TR 50404 [4], incorporating guidance on the safe use of FIBC of Type A, B, C and D.

IEC 61340-4-4 Ed. 1.0

Although guidance on safe use was now standardised, testing and labelling remained open to the vagaries of manufacturers. Users often found it difficult to compare FIBC from different manufacturers because test methods or parameters were often very different, or presented in different ways on safety labels. In developing the first edition of IEC 61340-4-4, the emphasis was very clearly on addressing these two issues. Test methods for measuring resistance and breakdown voltage and for conducting ignition testing were clearly specified. The standard also specified the essential information required on safety labels to enable users to identify FIBC and understand the level of protection provided.

IEC 61340-4-4 Ed. 2.0

There were some obvious omissions from the first edition IEC 61340-4-4, most notably there was nothing related to the selection and use of inner liners. After fur-

ther consideration in the Technical Committees, a new classification scheme for inner liners was finally agreed and included in the second edition of IEC 61340-4-4, published in 2012. In addition to the new classification scheme for inner liners, the second edition also addressed some issues relating to labelling. In Europe ATEX Directives [5,6] had come into effect and the concept of zoning of hazardous areas and grouping of explosive atmospheres had become well established. The IEC Ex System [7] brought these concepts to the international arena. There was a clear need for the labelling of FIBC to be consistent with the terminology used in ATEX and IEC Ex.

Another issue that needed to be addressed with labelling was the misuse of safety labels by manufacturers to promote non-standard types of FIBC. The classification scheme in IEC 61340-4-4 clearly defines four types of FIBC – Type A, Type B, Type C and Type D. However, some manufacturers were labelling their products as CD, D+, etc. The purpose of safety labels is to convey essential information about the FIBC to users, who can easily relate the guidance given in the standard with the type designation. However, how are users meant to relate “CD” or “D+” to the guidance in the standard?

To address all these issues, the second edition of IEC 61340-4-4 updated and revised the specification of safety labels. The first and most obvious change is that the background colour for all safety labels shall be yellow. Next is a change to the terminology used to define the hazardous areas in which the FIBC can be safely

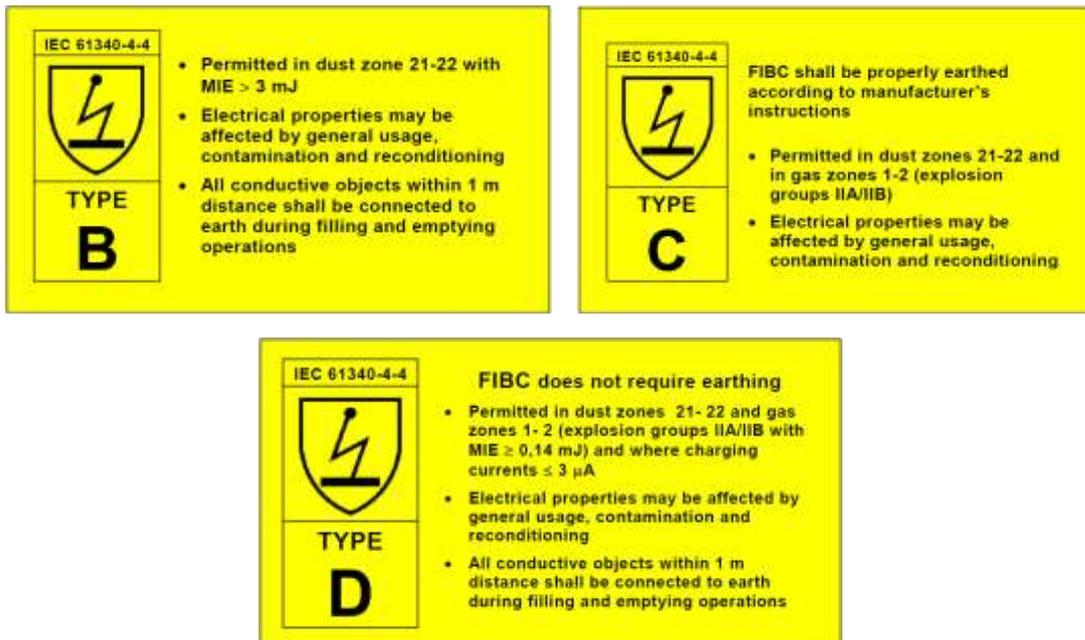


Figure 1: Examples of safety labels specified in IEC 61340-4-4 Ed. 2.0. Note: The Type C shown is the old label which has been overhauled.

used. Zones, gas groups and dust groups, as defined in ATEX and IEC Ex standards, are used to define the safe use areas for the FIBC. The international symbol for equipment providing protection against static electricity shall be shown on the safety labels; i.e. a shield device containing a stylised lightning flash. Finally, the type designation shall be shown, and only Type A, Type B, Type C or Type D are permitted. The second edition of IEC 61340-4-4 expressly prohibits the use of any type designation that is not defined in the standard. Examples of labels complying with the second edition of IEC 61340-4-4 are shown in Figure 1.

for Type C safety labels in the second edition of IEC 61340-4-4.

The problem is that the absence of this phrase from Type C safety labels is being misinterpreted as implying that nearby conductors, including operators and other personnel, do not need to be earthed when using Type C FIBC. This is VERY DANGEROUS. Isolated people will become charged by normal, everyday activities. Table 1 shows the body voltages that can arise on people. The data is taken from NFPA 77 [8] and a scientific paper published in the *Journal of Electrostatics* [9].

Situation	Body Voltage	Reference
Working at a bench	6 kV	NFPA 77
Vinyl envelopes for work instructions	7 kV	NFPA 77
Walking across a vinyl floor	12 kV	NFPA 77
Work chair padded with polyurethane foam	18 kV	NFPA 77
Polyethylene bag picked up from a bench	20 kV	NFPA 77
Walking across a carpet	35 kV	NFPA 77
Getting out of a car	20 kV	Pirici [9]

Table 1: Body voltages arising on isolated people from normal activities

Amendment

Since the publication of the second edition of IEC 61340-4-4, another issue relating to labelling has come to light. In Figure 1, it can be seen that the phrase “All conductive objects within 1 m distance shall be connected to earth during filling and emptying operations” is required on safety labels for Type B and Type D FIBC. In the first edition of IEC 61340-4-4, this phrase was required on all types of FIBC. The reason for this is that the electric field from any residual charge on FIBC can induce hazardous voltages on nearby isolated conductors. This phrase reminds users that even though they are using static protective FIBC, they must still follow established codes of practice and earth all conductors when operating in hazardous areas.

When writing the second edition of IEC 61340-4-4, manufacturers of Type C FIBC argued that because there is no significant field from properly earthed Type C FIBC, the phrase does not apply, and should not be included on the safety labels for Type C FIBC. The phrase was, therefore, omitted from the requirements

Isolated people charged to the voltages shown in Table 1 will create sparks if they go to touch any large or earthed conductor. Type C FIBC are essentially conductors and if a charged isolated operator approaches an earthed Type C FIBC, a spark will occur. Even at 6 kV there will be enough energy released in the spark to ignite a typical solvent.



Figure 2: Ignition of flammable gas as an isolated person goes to touch a fully earthed Type C FIBC

This hazard has been demonstrated experimentally [10]. Figure 2 shows the ignition of flammable gas as an iso-

lated person goes to touch a fully earthed Type C FIBC. In this experiment, the flammable atmosphere is created using an ignition probe specified in IEC 61340-4-4, and has minimum ignition energy of 0.14 mJ. The operator touching the FIBC is isolated and charged to 7 kV, which as shown in Table 1 can be easily reached through normal activity.

In response to this issue, IEC have approved an amendment to the second edition of IEC 61340-4-4. The amendment makes it clear that all conductors within hazardous explosive atmospheres shall be properly earthed. Conductors include people, Type C FIBC and conductive contents of FIBC, e.g. metal powders, etc. The amendment also makes the following phrase compulsory for all safety labels, including those for Type C FIBC:

All conductive objects, including personnel shall be earthed during FIBC filling and emptying operations

The amendment was approved in IEC by 100% positive vote on 25th July 2014 and was published on 11th November 2014. The amendment will automatically be included in copies of IEC 61340-4-4 Ed. 2.0 purchased after the amendment publication date. Copies of the amendment can also be purchased separately from IEC or National Standards Bodies.

References

- [1] IEC 61340-4-4 *Electrostatics – Part 4-4: Standard test methods for specific applications – Electrostatic classification of flexible intermediate bulk containers (FIBC)*, IEC, Geneva (2005 & 2012)
- [2] Maurer, Glor, Lutgens and Post, *Hazards Associated with Propagating Brush Discharges on Flexible Intermediate Bulk Containers, Compounds and Coated Materials*, Inst. Phys. Conf. Ser. No. 85, Oxford (1987).
- [3] CENELEC Report R044-001, *Safety of machinery – Guidance and recommendations for the avoidance of hazards due to static electricity*, CENELEC, Brussels (1999)
- [4] CLC/TR 50404, *Electrostatics – Code of practice for the avoidance of hazards due to static electricity*, CENELEC, Brussels (2003)
- [5] Directive 94/9/EC of the European Parliament and the Council of 23 March 1994 on the approximation of the laws of the Member States concerning equipment and protective systems intended for use in potentially explosive atmospheres
- [6] Directive 1999/92/EC of the European Parliament and of the Council of 16 December 1999 on minimum requirements for improving the safety and health protection of workers potentially at risk from explosive atmospheres
- [7] IEC System for Certification to Standards relating to Equipment for use in Explosive Atmospheres (IEC Ex System)

[8] NFPA 77, *Recommended practice on static electricity*, NFPA, Boston (2014)

[9] Pirici, Rivenc, Lebey, Malec, Agneray and Cheaib, *A physical model to explain electrostatic charging in an automotive environment; correlation with experiments*, Journal of Electrostatics 62, pp. 167 - 183 (2004)

[10] Holdstock, *Static Protective FIBC – Proposed Amendment to IEC 61340-4-4*, 8th World FIBC Congress, Amsterdam (2014)

About the Author



Dr Paul Holdstock is Technical Services Director at Texene LLC, manufacturer of CROHMIQ® Static Protective FIBC Fabrics. In addition he is Chairman of the IEC Technical Committee on Electrostatics and is responsible for

the development and maintenance of the International Standard for the testing and classification of static protective FIBC.

CONFERENCE REPORTS / PREVIEWS

EFIBCA UV Workshop in Prague

Directly following the EFIBCA Annual General Meeting in Prague, 19 delegates attended a workshop dedicated to discussing the challenges posed by damage to FIBC caused by ultraviolet light exposure and weathering. Dr. Daniel Müller of BASF presented from the technical side which chemical means are available to stabilize polymers against harmful weathering factors such as UV light and methods to test durability. Maxence Wittebolle from testing house BVI discussed the evolution of the prevailing testing regime under the ISO for UV Resistance and weathering of FIBC. Finally, Jeffery Quill of Q-Lab discussed the shortcomings of UV resistance test according to ISO 21898:2004 and the need to find a correlation between an FIBC outdoor lifespan and accelerated testing done in labs. Workshop participants discussed and prioritised the top UV-related topics facing the industry. The participants agreed on the need to better understand the correlation between UV lab tests and real weathering in different climate zones in order to find ways to make more reliable lifetime estimations for FIBCs. a.bouchat@efibca.com

MARKET NEWS

FIBC Import Statistics First Half 2014 - Imports from India overtaking imports from Turkey

Imports into the EU for the first half of 2014 show a marginal increase of 0.6% to a total of €182 Million in terms of value. A look at the volume based figures for the same period gives a more positive picture. With growth of 4.3% to almost 76 thousand tonnes, the increase in volume shows that the market is growing but apparently at a slower rate than in 2013 (2013 annual growth in KG equalled 8.7%).

Possible explanations for the difference between the value and volume growth rate are the increase of imports from countries with lower production costs and exchange rate fluctuations, i.e. the Euro appreciating with respect other currencies as compared to the same period in the previous year.

A look at the country figures shows that the FIBC market is highly competitive and dynamic. The shift from traditionally strong supplying countries like Turkey to countries with cheaper production, i.e. India and Bangladesh, continues.

Table 1 Total FIBC Imports to the EU

	1st HY 2014	1st HY 2013	Growth
Imports to the EU28 in m €	182.4	181.4	0.6%
Total Imports to EU28 in 1000 kg	75,615	72,465	4.3%

Source: EFIBCA 2014 (based on Eurostat)

In comparison with the same period in 2013, India has overtaken Turkey and is now clearly the leading supplier of FIBC to the EU28 zone (with 50% import share by quantity and 43% by value). India and Turkey together account for more than 75% of imports.

Still, the competition between the rest of the leading countries is stiff. The figures show especially strong growth of imports from Bangladesh and Serbia. Bangladesh has even overtaken China and is now ranked 3rd of the top 6 exporting countries to the EU. The figures for China and Turkey showed the sharpest decline for the first half of 2014, while Thailand entered the top 6 and Vietnam dropped out of the ranking.

For more details please contact a.bouchat@efibca.com.

Table 2 Total FIBC Imports from individual countries to the EU28 (value)

Rank	Country	1 st half (Jan-Jun) 2014		1 st half (Jan-Jun) 2013		Growth %
		FIBC exports to the EU (m €)	Share of total imports to the EU	FIBC exports to the EU (m €)	Share of total imports to the EU	
1 ↗	INDIA	77,7	42,6%	65,9	36,4%	17,8%
2 ↘	TURKEY	62,8	34,4%	72,9	40,2%	-13,9%
3 ↗	BANGLADESH	9,9	5,4%	8,3	4,6%	18,8%
4 ↘	CHINA	9,8	5,4%	13,3	7,3%	-26,0%
5 →	SERBIA	7,2	4,0%	6,0	3,3%	21,1%
6 ↗	THAILAND	3,8	2,1%	4,2	2,3%	-9,3%

Source: EFIBCA 2014 (based on Eurostat) HY = Half Year

→ no change in rank compared to previous year ↗ up in rank compared to previous year ↘ down in rank compared to previous year

INTERNAL NEWS

New EFIBCA members

EFIBCA warmly welcomes new member BAOBAG S.A.S. (October 2014). With headquarters in Marseille, France, BAOBAG supplies and reconditions flexible packaging for industry, agriculture, environmental professions and retail.

UPCOMING EVENTS

Preview EFIBCA AGM and Open Meeting, 29 - 30 September 2015

In 2015 the EFIBCA Annual General Meeting (AGM) and the EFIBCA Open Meeting coincide and will be held together in the Spanish port city, Barcelona. While the AGM is exclusively for EFIBCA members, the Open Meeting is for the general public. "By hosting the Open Meeting directly following the AGM in this beautiful city, we hope to generate a positive atmosphere for networking and information exchange," says EFIBCA Secretary General, Dr. Isabell Schmidt.

At the upcoming EFIBCA Annual General Meeting members will choose a new President and Council. According to the association's constitution, the president can only preside for 2 consecutive 2-year terms. The AGM is traditionally followed by a Social Event, which will be open to non-members attending the Open Meeting the following day.

The focus of the EFIBCA Open Meeting will be the FIBC market, sustainability and quality assurance and safety. Following informative and insightful presentations by industry experts, the event will conclude with a networking cocktail reception. Information on how to register to follow soon on www.efibca.com.

FIBC Calendar

PFP Expo Sino-Pack
09 - 11 March 2015, Guangzhou, China
<http://www.chinasinopack.com/>

3P Pakistan
12 - 14 March 2015, Lahore, Pakistan
<http://www.plasprintpack.com.pk/>

EuPC Food Contact Plastics Seminar 2015
23 - 24 April, 2015, Brussels, Belgium
<http://www.plasticsconverters.eu/>

Plast
5 - 9 May, 2015, Milan, Italy
<http://www.plastonline.org/en/>

Techtextil
4 - 6 June 2015, Frankfurt, Germany
<http://techtextil.messefrankfurt.com>

EFIBCA Council Meeting
18 June 2015, Vienna, Austria
www.efibca.com

World FIBC Congress and Exhibition
23 - 24 September 2015, Las Vegas, USA
<http://www.mcimedia.com/>

EFIBCA Council Meeting
29 September 2015, Barcelona, Spain
www.efibca.com

EFIBCA Annual General Meeting
29 September 2015, Barcelona, Spain
www.efibca.com

EFIBCA Open Meeting
30 September 2015, Barcelona, Spain
www.efibca.com

FIBCA Conference
14 - 16 October, 2015, San Diego, USA
<http://fibca.com/>

ITMA
12 - 19 November 2015, Milan, Italy
<http://www.itma.com/>

Orange: EFIBCA meetings

Lilac: external conferences

© EFIBCA 2015

Disclaimer: The sole responsibility for the content of articles in this newsletter lies with the authors. They do not necessarily reflect the opinion of EFIBCA. EFIBCA is not responsible for any use that may be made of the information contained therein.