EFIBCA news
European Flexible Intermediate Bulk Container Association

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EFIBCA is the voice of the Flexible Intermediate Bulk Container industry. In this issue:

UPCOMING EVENTS

EFIBCA Open Meeting 2010

11 May 2011 at the TRYP hotel in Düsseldorf

EFIBCA will hold its third **Open Meeting on 11 May 2011** at Tryp Airport Hotel in **Düsseldorf**, Germany.
This is only one day before the start of interpack, the biggest packaging fair worldwide, which opens its doors from 12 to 18 May. So get the most out of your visit to Düsseldorf for your business.
EFIBCA Open Meetings are the perfect platform for exchange and networking across the FIBC industry. Expert speakers will bring you up to speed on a variety of business aspects, ranging from the raw material market to end-of-life solutions of FIBC and practical approaches to corporate social responsibility. Last but not least EFIBCA is going to present its newly developed quality certification scheme, called EFIBCA-Cert.

Programme

11.00 am	**Reception and Welcome Brunch**
11.50 am	**Welcome** by Dr Amir Samadijavan, President of EFIBCA
12.00 am	**EFIBCA and EFIBCA-Cert** by Dr Amir Samadijavan, President of EFIBCA
12.30 am	**Polypropylene 2011 – Another Year of Surprises?** by Remko Koster, CMAI
1.00 pm	**Coffee break**
1.30 pm	**Hygiene and Food Standards in the Packaging Industry** by Beate Heidorn, Intertek Food Services GmbH
2.00 pm	**The Business Benefits of Improved Corporate Social Responsibility** by Edwin Koster, Social Accountability International
2.30 pm	**Carbon Footprints** by Dr Isabell Schmidt, General Secretary of EFIBCA
3.00 pm	**Coffee break**
3.30 pm	**Mineral Additives – Properties and Perspectives for FIBCs** by Hannes Meier, M2 Consulting GmbH
4.00 pm	**Recycling of FIBC and Woven Bag Product Waste** by Helmut Fliesser, Starlinger & Co. Ges. m.b.H.
4.30 pm	**Reconditioning FIBCs – The Way to Sustainability** by Raoul van Rattingen, Rebu c.v.
5.00 pm	**Drinks and social networking** at the hotel bar

Registration

Please register by filling out the online registration form at www.efibca.com. Registration charge is € 240 per person for non-members and € 120 per person for EFIBCA members. Included in the charge are a **free day ticket for the interpack**, a welcome brunch, soft drinks, coffee and snacks as well as the meeting dossier. More information and the programme leaflet are available at www.efibca.com.

SPECIAL THEME

Second Edition of the International Standard for Evaluating Static Protective FIBC

by Dr Paul Holdstock, Technical Services Director, Texene LLC

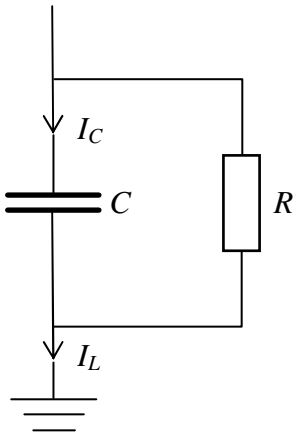
In 2005, IEC Technical Committee, TC101 on Electrostatics published an International Standard for test methods for evaluating the safety of static protective FIBC, IEC 61340-4-4[1].

The first edition of IEC 61340-4-4 contains three main elements: a) classification and labelling; b) performance requirements; and c) test methods. In IEC 61340-4-4 Ed. 1.0 there are essentially three types of FIBC: those designed only to prevent propagating brush discharges (PBD); those designed to prevent all forms of hazardous discharge from the FIBC via grounding; and those designed to prevent all forms of hazardous discharge from the FIBC without grounding. The type classification system (i.e. Type A, Type B, Type C and Type D) is not used in the first edition.

IEC 61340-4-4 Ed. 1.0 specifies the requirements for labelling to ensure that only essential safety information is conveyed in a meaningful manner to the end user. The label shall identify FIBC as complying with the standard, the type of FIBC and any limitations of use.

IEC 61340-4-4 Ed. 1.0 states that propagating brush discharge control FIBC and static control FIBC shall be constructed from materials with a breakdown voltage of less than 6 kV. This is higher than the limit of 4 kV specified in CLC/TR 50404 [2]. The original research by Maurer et al. [3], on which the guidance in CLC/TR 50404 is based, was done using flat polymeric film. Studies done during the development of IEC 61340-4-4 Ed. 1.0 on woven FIBC fabrics showed that a breakdown voltage limit of 6 kV will ensure protection against PBD.

The maximum resistance to groundable points for static control FIBC required to be grounded is specified in IEC 61340-4-4 Ed. 1.0 as $10^8\Omega$. As explained in CLC/TR 50404, this limit is derived from a simple charging model for conductors, shown in Figure 1.



Key

I_C Charging current
C Capacitance of conductor
R Leakage resistance (resistance to ground)
I_L Leakage current

The potential on the conductor is given by:

$$V = I_C R - (I_C R) e^{-\frac{t}{RC}} \quad (1)$$

Maximum potential is reached when time t is large:

$$V_{\max} = I_C R \quad (2)$$

Figure 1 Charging model for a conductor connected via a resistance to ground.

For an incendiary spark to occur from a conductor, the potential on the conductor needs to be at least 300 V. Therefore, to avoid incendiary sparks, the maximum potential on a conductor must be maintained below 300 V. From equation (2) in Figure 1, it can be seen that with a resistance to ground of $10^8\Omega$, the maximum charging current for safe operation of static control FIBC is 3 µA. This is a reasonable limit for most industrial situations, where charging currents only rarely exceed a few microampere.

The ignition test described in IEC 61340-4-4 Ed. 1.0 is primarily intended to evaluate the safety of static control FIBC that do not require grounding. The performance requirement for FIBC tested using this method is simply that no ignition shall occur.

At the time of writing the final draft of the second edition of IEC 61340-4-4 is being prepared. The first voting draft was approved by 94% of participating members of TC101.

The major changes and additions in the second edition are:

- Adoption of type classification system
- Lower resistance to groundable points limit for Type C FIBC (from $10^8\Omega$ to $10^7\Omega$)
- Resistance and breakdown voltage only needs to be measured at low humidity (ignition testing still needs to be done at both low and high humidity)
- Classification, performance requirements and safe use of inner liners
- Guidance on the safe use of FIBC
- Guidance on quality control & inspection testing

IEC 61340-4-4 Ed. 2.0 will adopt the type classification system first proposed by Maurer et al. and extended in CLC/TR 50404. FIBC are classified according to one of four types: Type A, Type B, Type C and Type D. The types are defined by the construction of the FIBC, the nature of their intended operation and associated performance requirements. An individual design of FIBC may only be classified as one single type; for example one FIBC cannot be simultaneously classified as both Type B and Type D, or as Type CD.

Along with the introduction of the type classification system, IEC 61340-4-4 Ed. 2.0 will introduce requirements for improved labelling. The labelling requirements in the second edition are intended to produce clearer labelling, with the type immediately obvious and the intended use expressed in a way that is familiar to safety personnel in end user facilities. An example of a label complying with the requirements of IEC 61340-4-4 Ed. 2.0 is shown in Figure 2.

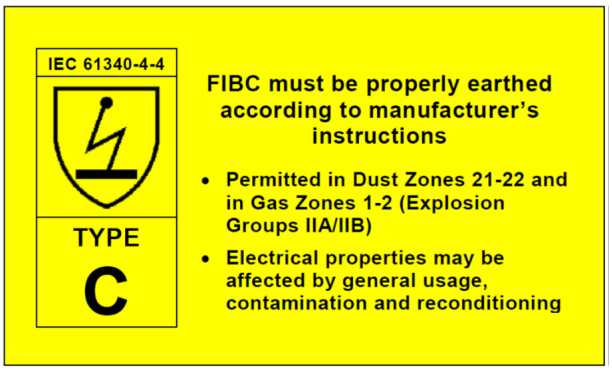


Figure 2 Example of a label required by IEC 61340-4-4 Ed. 2.0.

It is important to note that the use of any other designations (e.g. D+, Dplus, etc.) will not be permitted on safety labels on FIBC claiming compliance with IEC 61340-4-4.

In IEC 61340-4-4 Ed. 2.0, resistance to groundable point and breakdown voltage measurements will only need to be done at low humidity. Ignition testing will still be required to be done at both low and high humidity.

The resistance to groundable point limit will be reduced from $10^8\Omega$ to $10^7\Omega$. The reason for this change is related to the maximum charging current permitted for the safe operation of Type C FIBC. In the first edition, a limit of 3 µA is set for the maximum charging current. This limit is derived from the charging model explained in Figure 1 above. In Germany, regulations allow the use of Type C FIBC without any restriction on charging current. The German National Committee requested that IEC 61340-4-4 be changed so that it can be adopted in Germany without conflicting with local regulations. The solution was to lower the resistance to ground limit for Type C FIBC. In setting the limit at $10^7\Omega$, the maximum safe charging current is increased to 30 µA, which is so much higher than any known industrial process can generate, that for practical purposes there is no need to specify the limit.

The scope of IEC 61340-4-4 Ed. 1.0 does not include inner liners in any way. IEC 61340-4-4 Ed. 2.0 will include classification, performance requirements and guidance on the safe use of inner liners in different types of FIBC, and the details are summarised in Table 1.

The breakdown voltage limit for all types of inner will be specified as 4 kV in IEC 61340-4-4 Ed. 2.0 (Note: Breakdown voltage measurements will not be required for some configurations of Type L1 and Type L2 inner liners). The limit for FIBC fabric will remain at 6 kV. The reason for this difference is that inner liners are usually made from flat polymeric film, as used by Maurer et al. in their original work, and hence that data is valid for inner liners, but not for woven fabric used to construct FIBC.

Guidance on the safe use of FIBC is given in CLC/TR 50404. This guidance has been updated and will be included in IEC 61340-4-4 Ed. 2.0. The guidance is summarised in Table 2 below.

The test procedures specified in IEC 61340-4-4 Ed. 2.0 can be used for quality control testing, but for many manufacturers and users they may be too complex, too time consuming or too expensive.

In contrast to type qualification testing, where FIBC are evaluated against standard acceptance criteria, quality

Table 1 Summary of IEC 61340-4-4 Ed. 2.0 classification and requirements for inner liners

Type of Inner Liner	Requirements	Intended Use
Type L1	Inner liners made from materials with surface resistivity on at least one surface less than or equal to 10^7 Ω Breakdown voltage less than 4 kV	Type C FIBC
Type L2	Inner liners made from materials with surface resistivity on at least one surface between 10^9 Ω and 10^{12} Ω Breakdown voltage less than 4 kV	Type B, C or D FIBC
Type L3	Inner liners made from materials with surface resistivity of greater than 10^{12} Ω Breakdown voltage less than 4 kV	Type B FIBC
Note: This table only summarises the requirements for inner liners. Further details of the requirements for inner liners that are essential to their safe use will be included in IEC 61340-4-4 Ed. 2.0.		

control testing allows manufacturers and users to evaluate FIBC against acceptance criteria that they specify and which are often only valid for a specific design of FIBC or application.

For this reason, quality control test methods and acceptance criteria used by one manufacturer or user may not be appropriate for evaluating FIBC from other manufacturers or FIBC intended for other specific uses.

An informative annex in IEC 61340-4-4 Ed. 2.0 describes some tests that may be useful for quality control testing. The list of suggested test methods includes measurements of resistance, charge decay time, and charge transferred in electrostatic discharge. The list of test methods is not comprehensive and there may be other test methods that are equally suitable.

An important note in IEC 61340-4-4 Ed. 2.0 is that quality control test methods shall not be used as a substitute for the type qualification test methods specified in the main part of the standard.

The Final Draft International Standard (FDIS) of IEC 61340-4-4 Ed. 2.0 is currently being prepared by IEC Central Office for release in June 2011. The expected publication date for the standard is November 2011.

Table 2 Safe use of different types of FIBC

Bulk product in FIBC	**Surroundings**		
MIE of dust	Non flammable atmosphere	Dust zones 21-22 (1 000 mJ > MIE > 3 mJ)	Gas zones 1-2 (Explosion groups IIA/IIB) or dust zones 21-22 (MIE ≤ 3 mJ)
MIE > 1 000 mJ	**A,B,C,D**	**B,C,D**	**C,D**
1 000 mJ > MIE > 3 mJ	**B,C,D**	**B,C,D**	**C,D**
MIE ≤ 3 mJ	**C,D**	**C,D**	**C,D**

(MIE = minimum ignition energy)

Acknowledgements

IEC 61340-4-4 Ed. 2.0 has been developed by Joint Maintenance Team 7 (JMT7) of IEC/TC 101. I thank my colleagues in JMT7 for their hard work and support during the course of this project.

References

[1] IEC 61340-4-4, Electrostatics – Part 4-4: Standard test methods for specific applications – Electrostatic classification of flexible intermediate bulk containers (FIBC), First Edition (2005)

[2] CLC/TR 50404, Electrostatics – Code of practice for the avoidance of hazards due to static electricity (2003)

[3] Maurer B, Glor M, Lüttgens G and Post L, Hazards associated with propagating brush discharges on flexible intermediate bulk containers, compounds and coated materials, Inst. Phys. Conf. Ser. No. 85 (1987)

About the author

Paul Holdstock is Technical Services Director at Texene LLC, manufacturer of CROHMIQ®, the world's leading static protective FIBC fabrics. As Convenor of IEC/TC101/JMT7, he has managed the projects to develop both the first and second edition of IEC 61340-4-4. Paul is a member of the EFIBCA Technical Committee.

TEXENE™ Technical Textiles

MARKET NEWS

FIBC Import Statistics 2010

After a severe recession in 2009, the value of FIBC imports to the EU27 has picked up again in 2010. It increased by 45% and amounts to a total of 267.5 million Euros in 2010 (see table 1). However, this is still much less than in 2008 (358.8 million Euros, see EFIBCA news No 1).

Turkey consolidated its leading position as FIBC exporter, accounting for almost 40% of the import value to the EU. This is followed by India with approximately 30% import share and China (13.4%). The top 3 FIBC exporting countries together assume approximately 83% of the total import value to the EU27 (table 2).

Ranks 4 to 6 go to Bangladesh, Thailand and Serbia. Remarkably, Bangladesh more than doubled its exports to the EU in 2010 (from 5.1 to 10.4 million Euros), thereby clearly overtaking Thailand and Serbia.

Table 1 Total Import of FIBC[1] to the EU27 (value)

	2010	2009	
	m €	m €	
Imports to the EU27	267.5	184.9	+45 %

Source: Eurostat

[1] FIBC of Polyethylene or Polypropylene, excl. knitted or crocheted

Table 2 Top 6 Exporting Countries of FIBC to the EU27 (by value)

		2010		2009	
2010 Rank	Country	m €	Import Share	m €	Import Share
1 ➔	Turkey	105.9	39.6 %	68.1	36.8 %
2 ➔	India	80.5	30.1 %	61.0	33.0 %
3 ➔	China	35.9	13.4 %	26.1	14.1 %
4 ↗	Bangladesh	10.4	3.9 %	5.1	2.8 %
5 ➔	Thailand	8.4	3.2 %	5.2	2.8 %
6 ↘	Serbia	7.8	2.9 %	5.3	2.9 %

Source: Eurostat

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

LEGISLATION, STANDARDS & TECHNOLOGY

New EU Regulation No 10/2011 on Food Contact Materials (PIM Regulation)

The "Commission Regulation (EU) No 10/2011 on plastic materials and articles intended to come into contact with food", also known as "Plastics Implementation Measure" (PIM) was issued on 14 January 2011. This regulation unifies and revises all former EU provisions on plastic materials designed for food contact.

The new PIM regulation applies throughout all 27 EU member states in an identical wording, i.e. no national deviations are permissible. It becomes applicable on 1 May 2011. However, a number of provisions only apply from 2013 or 2016 on.

The PIM regulation contains a number of changes to the former food contact law, e.g. with regard to migration tests and testing simulants. EFIBCA provides two tables with a compilation of the most important changes in the new PIM Regulation:

- A comparison of simulants for migration testing
- A comparison of old and new testing simulants according to food categories

These tables can be downloaded from the member section on the EFIBCA homepage together with the full PIM regulation (www.efibca.com).

INTERNAL NEWS

EFIBCA-Cert Quality Criteria adopted

EFIBCA achieved a key milestone in the development of its quality certification label for big bags, so-called EFIBCA-Cert. By 7 January, EFIBCA members adopted the EFIBCA-Cert Quality Criteria by written procedure.

The Quality Criteria refer to important international standards which must be followed in order to qualify for the FIBC product label. Besides of basic requirements, they also contain specific requirements for food contact bags, FIBCs for the transport of dangerous goods, static protective bags, and hygiene bags.

The EFIBCA-Cert Quality Criteria can be downloaded from the member section on the EFIBCA homepage (www.efibca.com).

UPCOMING EVENTS

FIBC Calendar

EFIBCA Open Meeting 2011
11 May 2011, in conjunction with interpack, Düsseldorf, Germany
www.efibca.com

interpack 2011
12 – 18 May 2011, Düsseldorf, Germany
www.interpack.com

Techtextil 2011 - International Trade Fair for Technical Textiles and Nonwovens
24 – 26 May 2011, Frankfurt, Germany
www.techtextil.messefrankfurt.com

EFIBCA Council Meeting
10 June 2011, Bad Homburg, Germany
www.efibca.com

EFIBCA AGM
Autumn 2011 (date tbd), Dubai
www.efibca.com

Lilac colour: open to everybody
Orange colour: for EFIBCA members only

c/o IK Industrievereinigung Kunststoffverpackungen e.V.
Kaiser-Friedrich-Promenade 43
61348 Bad Homburg
Germany
Tel.: +49 6172 926665
Fax: +49 6172 926670