



GUIDANCE NOTE 28

**PACKAGING WASTE WITHIN THE
INDUSTRIAL GASES INDUSTRY**

REVISION 1: 2015

British Compressed Gases Association

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PREFACE

The British Compressed Gases Association (BCGA) was established in 1971, formed out of the British Acetylene Association, which existed since 1901. BCGA members include gas producers, suppliers of gas handling equipment and users operating in the compressed gas field.

The main objectives of the Association are to further technology, to enhance safe practice, and to prioritise environmental protection in the supply and use of industrial, food and medical gases, and we produce a host of publications to this end. BCGA also provides advice and makes representations on behalf of its Members to regulatory bodies, including the UK Government.

Policy is determined by a Council elected from Member Companies, with detailed technical studies being undertaken by a Technical Committee and its specialist Sub-Committees appointed for this purpose.

BCGA makes strenuous efforts to ensure the accuracy and current relevance of its publications, which are intended for use by technically competent persons. However this does not remove the need for technical and managerial judgement in practical situations. Nor do they confer any immunity or exemption from relevant legal requirements, including by-laws.

For the assistance of users, references are given, either in the text or Appendices, to publications such as British, European and International Standards and Codes of Practice, and current legislation that may be applicable but no representation or warranty can be given that these references are complete or current.

BCGA publications are reviewed, and revised if necessary, at five-yearly intervals, or sooner where the need is recognised. Readers are advised to check the Association's website to ensure that the copy in their possession is the current version.

This document has been prepared by BCGA Technical Sub-Committee 8. This document replaces BCGA Guidance Note 28: 2014. It was approved for publication at BCGA Technical Committee 153. This document was first published on 10/12/2015. For comments on this document contact the Association via the website www.bcgaco.uk.

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* Throughout this publication the numbers in brackets refer to references in Section 7. Documents referenced are the edition current at the time of publication, unless otherwise stated.

TERMINOLOGY AND DEFINITIONS

Gas cylinder	A transportable pressure receptacle of a water capacity not exceeding 150 litres.
May	Indicates an option available to the user of this Guidance Note.
Packaging	<p>Packaging is anything used to contain, protect, handle, deliver or present raw materials and processed goods. It includes items such as:</p> <ul style="list-style-type: none">• Boxes• Pallets• Crates• Labels• Containers• Tubes and cores• Bags and sacks• Tape and materials for wrapping, binding and tying. <p>If an item is integrated into packaging and intended to be used and thrown away with it, it is still considered as packaging.</p>
Shall	Indicates a mandatory requirement for compliance with this Guidance Note and may also indicate a mandatory requirement within UK law.
Should	Indicates a preferred requirement but is not mandatory for compliance with this Guidance Note.

GUIDANCE NOTE 28

PACKAGING WASTE WITHIN THE INDUSTRIAL GASES INDUSTRY

1. INTRODUCTION

The European Union (EU) first introduced measures on the management of packaging waste in the early 1980s. European Directive 85/339/EEC (6), on *the packaging of liquid beverage containers*, covered the packaging of liquid beverage containers intended for human consumption only but it was too vague to bring about the effective harmonisation of national policies. As a consequence, diverging national legislation appeared in several Member States.

Some EU Member States introduced measures on packaging and packaging waste management with a view to reducing their environmental impacts. However, serious internal market problems arose when cheap secondary materials from countries with recycling schemes that provided funding for collection and recycling appeared on the markets of other member states where no such schemes were in place. Collection and recycling activities that relied on cost recovery through the sale of secondary raw material were threatened by collapse.

For this reason, economic operators and member states approached the European Commission to introduce comprehensive legislation on packaging. In 1992, the Commission adopted Directive 94/62/EC (7), on *Packaging and Packaging Waste*.

The Directive aims to harmonise national measures in order to prevent or reduce the impact of packaging and packaging waste on the environment and to ensure the functioning of the Internal Market. It contains provisions on the prevention of packaging waste, on the re-use of packaging and on the recovery and recycling of packaging waste.

In the UK this Directive is implemented through the Producer Responsibility Obligations (Packaging Waste) Regulations (2) and the Packaging (Essential Requirements) Regulations (1). Responsibility for implementing these regulations rests with the Department for Business, Innovation and Skills or the agency responsible for the environment in your geographical area or jurisdiction,

The Packaging (Essential Requirements) (Amendment) Regulations (4) include, amongst others, '*Refillable steel cylinders used for various kinds of gas, excluding fire extinguishers*'. Refer also to the Environment Agency information note (5) dated 1st October 2013.

The European Industrial Gases Association (EIGA) Document 181 (9), *Gas cylinders compliance with the revised packaging waste directive 94/62/EC as amended*, provides guidance on compliance with Directive 94/62/EC (7) on the prevention of packaging waste for gas cylinders. Refer to Appendix 1.

2. SCOPE

This Guidance Note covers the supply of refillable steel gas cylinders as referenced within the Packaging (Essential Requirements) (Amendment) Regulations (4).

3. BACKGROUND

The UK has implemented European Directive 94/62/EC (7) which has set recovery and recycling targets for packaging waste. The definition of packaging includes materials used for containment, protection, handling, delivery and presentation of goods.

Collection of waste is not sufficient. It is necessary to prove that the specified tonnages of packaging waste have been recovered and recycled. This includes reprocessing into new material, composting and incineration with energy recovery.

The relevant packaging materials are aluminium, glass, paper and board, plastic, wood and steel. There are specific recycling targets for each individual material.

Who is obligated?

A company can be obligated by undertaking one of the following activities:

- Raw material producers and packaging manufacturers;
- Packer fillers, such as chemical and gas manufacturers who fill products into the packaging;
- Sellers who sell a product in packaging, such as chemical and gas producers, to the final user of the packaging (generally the person who discards the packaging) takes a share;
- Service providers who supply rented packaging for use;
- Importers who pick up the share of the responsibility for all the previous stages in the packaging chain;

NOTE: Imports are included and exports are excluded.

All businesses which handle over 50 tonnes of packaging a year and have a turnover of more than £2 million have to register with the authorities or an approved scheme.

Further information including compliance schemes can be found at:

Business Link:

<https://www.gov.uk/packaging-waste-producer-supplier-responsibilities/producers>

NetRegs:

http://www.netregs.org.uk/library_of_topics/materials_equipment/general/packaging.aspx

4. COMPLIANCE

For every tonne of new packaging put into the market, each obligated company needs to purchase Packaging Recycling Notes (PRNs). A third party can carry out this function for the company.

Producers that are obligated by the regulations have a choice of complying with their obligations in one of two ways:

- Individual registration and discharge of compliance obligations themselves.
- Join a compliance scheme which will discharge their obligations.

5. OBLIGATED PACKAGING

A company who undertakes one of the following activities can be obligated:

- Raw material manufacturer. Producing raw materials for packaging manufacturing.
- Packaging converter. Converting raw materials into packaging.
- Importer. Importing packaged goods or packaging materials into the UK.
- Packer / filler. Putting goods in packaging or putting packaging around goods. Typically the owner of the brand on the packaging.
- Seller. Supplying packaging to the end user
- Service provider. A business that supplies packaging by hiring it out or lending it.

BCGA members who fill cylinders and exceed the obligation threshold will pick up an obligation as a packer / filler. If directly importing cylinders then the importing obligation too will fall upon the gas company. The typical business model for providers of gas cylinders is shown in Appendix 2.

Steel cylinders are only obligated the first time they enter into the market. If they are held unused in stock they do not count until filled and distributed. Refilled steel cylinders and refurbished steel cylinders are not obligated.

Filled refillable gas steel cylinders are distributed directly to the gas user or via a third party. The gas company, however, retains ownership of the cylinder throughout the fill/collect/refill cycle so it is not at all clear that BCGA members should pick up the seller share of the obligation.

Distributors and Agents are not obligated as gas supply companies retain ownership and take responsibility for the gas cylinder along the supply chain, with a return and recovery system in place.

Obligated packaging, associated with gas cylinders (steel), is shown in Table 1.

The actions that companies should be taking to ensure compliance are:

- Gathering data on all packaging imported or sold that enters the UK waste stream from the business.
- If the business handles >50 tonnes packaging and >£2 million, register with a compliance scheme or the agency responsible for the environment in your geographical area or jurisdiction to ensuring that packaging for which the company is responsible (obligated packaging) is recovered. Refer to Section 4.
- Develop data systems to ensure the ability to report the above information more accurately in future.
- Minimise the amount of packaging received from suppliers.

Type of packaging	Reporting obligation	Recovery obligation	Comments
Steel cylinders including a valve Refer to NOTES *	Yes	Yes	Requirement in Packaging (Essential Requirements) (Amendment) Regulations (4)
Cylinder packs	No	Yes	Requirement in Packaging (Essential Requirements) (Amendment) Regulations (4) For the cylinders only as the packs themselves are distribution equipment
Cylinder distribution pallets	No	No	Not packaging as these are distribution equipment designed specifically for the vehicles
Packaging on equipment purchased for resale	Yes	Yes	Amount of obligation depends on UK/Import
Packaging on equipment	Yes	Yes	Only if you are the importer into UK
Aerosol cans	Yes	Yes	

Table 1: Obligated packaging

* NOTES:

1. Valves are included at the time of first use as each cylinder will require a closure device. The replacement of valves is not included.
2. Additional items, such as labels, valve guards and dip tubes are insignificant in terms of weight or are not supplied as part of a packaging function (they are there to meet transport or operational functions). These are therefore not included.

6. REQUIRED ACTIONS FOR BCGA MEMBERS

The following actions, for reporting data and meeting your obligations, should be considered for ensuring compliance for 2013 and for future compliance years.

6.1 For businesses currently not obligated (below the 50 tonne threshold)

Review steel cylinder purchases made in 2013 to see if registering is necessary, if the business handles >50 tonnes packaging and has a turnover >£2 million, register with a compliance scheme or the responsible Agency. Registration needs to take place by 7th April each year following the year in which you have crossed the threshold and have an obligation. Collect data for cylinders as in Section 6.2 below.

Failure to register will result in a fine. All data should be gathered by March. New cylinders put into the market in December can count towards the year in which it falls or the following year.

The vast majority of packaging producers register via a third party. A list can be found on the Environment Agency website:

<http://npwd.environment-agency.gov.uk/PublicRegisterSchemes.aspx>

6.2 For businesses already obligated

Collect and report data as follows for October to December 2013:

- Number / overall weight of new steel cylinders purchased /imported into the UK.
- Number/ overall weight of steel cylinders disposed of in the UK.
- Number/ overall exported for specialist recycling / treatment, for example, acetylene cylinders.
- Weight of cylinders sold in the UK or sold and exported.

NOTE: Steel cylinders imported or exported as part of normal business activities (refilling, emptying and sending back for refilling) shall not be included.

6.3 Obligation

The new regulations came into force in October 2013, part way through the 2013 compliance year.

The obligation is expressed as:

$$P \times C \times X = Z$$

Where:

P = Tonnes of packaging & packaging materials handled by the company previous year

C = Companies % obligation	Manufacturer:	6 %
	Converter:	9 %
	Importer:	15 %
	Packer / Filler:	37 %
	Seller:	48 %

NOTE: These are correct at date of publication but may change. Refer to the Producer Responsibility Obligations (Packaging Waste) Regulations (2), Schedule 2.

X = % recovery target for that year as set by DEFRA

NOTE: At the date of publication it is 75 % for steel, but this will change over time. For 2017 it is forecast to be 76 %.

Z = Amount to be recovered within relevant year

Example:

100 tonnes (P) of new cylinders are packed and filled (C = 37 % of obligation):

$100 \times 37 \% \times 75 \% = 27.75$ tonnes of PRNs need to be purchased (Z).

End of life cylinders scrapped via a registered recycler attract PRNs (or if exported whole can attract a Packaging Export Recycling Note) so can be offset against the obligation. You will need to obtain evidence from the recycler that they are registered as part of your contract.

If the supplier recycles more steel than the new steel they put on the market then they will have PRNs to sell. If the cylinders are exported whole (NOT as scrap) then a Packaging Export Recycling Note can be used instead of a PRN.

For long life packaging (which includes cylinders) the obligation that falls in one year may be spread over 3 years, if there is no activity in those years.

NOTE: Directive 94/62/EC (7) also states: “*Whereas Member States may encourage, in accordance with the Treaty, reuse systems of packaging which can be reused in an environmentally sound manner, in order to take advantage of the contribution of such systems to environmental protection.*”(Recitals and Article 5). This is a case for exempting the gas cylinder supply chain.

7. REFERENCES

Document Number	Title
1. SI 2003 No. 1941	Packaging (Essential Requirements) Regulations 2003 (as amended).
2. SI 2007 No. 871	Producer Responsibility Obligations (Packaging Waste) Regulations 2007.
3. SI 2009 No.1348	Carriage of Dangerous Goods and Use of Transportable Pressure Equipment Regulations 2009 (as amended).
4. SI 2015 No.1640	Packaging (Essential Requirements) (Amendment) Regulations 2015.
5. Environment Agency	Information note on changes in the packaging waste directive dated 1 st October 2013. https://npwd.environment-agency.gov.uk/FileDownload.ashx?FileId=dcbc9373-4693-4799-b2a6-721d5322a59b
6. European Directive 85/339/EEC	The packaging of liquid beverage containers.
7. European Directive 94/62/EC	Packaging and Packaging Waste.
8. ECE/TRANS/242	European Agreement concerning the International Carriage of Dangerous Goods by road (ADR).
9. EIGA Document 181	Gas cylinders compliance with the revised packaging waste directive 94/62/EC as amended.

Further information can be obtained from:

UK Legislation	www.legislation.gov.uk
European Industrial Gases Association (EIGA)	www.eiga.eu
British Compressed Gases Association (BCGA)	www.bcgaco.uk
The Environment Agency (EA)	www.gov.uk/government/organisations/environment-agency
Scottish Environment Protection Agency (SEPA)	www.sepa.org.uk
Natural Resources Wales (NRW)	www.naturalresourceswales.gov.uk

Northern Ireland Environment
Agency
(NIEA)

www.doeni.gov.uk/niea/

Department for Business, Innovation
and Skills (BIS)

[www.gov.uk/government/organisations/department-
for-business-innovation-skills](http://www.gov.uk/government/organisations/department-for-business-innovation-skills)

Department for Environment, Food
and Rural Affairs (DEFRA)

www.defra.gov.uk

INDUSTRIAL GAS CYLINDERS AND PACKAGING WASTE

With reference to EIGA Document 181 (9), *Gas cylinders compliance with the revised packaging waste directive 94/62/EC as amended*.

The gas cylinder is a fully reusable package with an economic life well in excess of 20 years, which is fully recyclable at the end of its life.

Industrial Gas companies take responsibility for the cylinder by retaining ownership and ensuring there are systems in place for return and reuse of the cylinder. If the cylinder is no longer suitable for use (e.g. it is damaged or fails a test) it is normal practice to remove any residual gases before sending the cylinder for recycling and recovery of materials. The cylinder enters the waste stream (for recovery) only if it fails its periodic 'revalidation' test.

It is thus only in exceptional circumstances that gas cylinders are land filled, representing less than 1 % of those cylinders removed from the commercial cycle due to the cylinder failing its periodic validation test. New cylinders therefore are not to replace those going to landfill sites, but represent growth in the gases business. In any case with a 20 plus year life span before recovery new cylinders are not representative of the cylinders sent now for recovery.

In most cases the gas cylinder remains the property of the gas company, and is rented to the customer, thus not 'sold'. Thus by providing a fully reusable, recyclable package and full producer responsibility for it, the Industrial Gas Industry already exceeds the targets in the Directive and the UK Producer Responsibility Regulations.

GAS CYLINDERS BUSINESS MODEL

Gas cylinders are procured by the gas supply companies; who then fill and distribute them to their customers. The vast majority of cylinders are supplied under a rental scheme. The cylinders remain the property of the gas supply company; they are very valuable assets and are returned and filled many times.

The gas supply companies take extensive steps to control and recover their cylinders. The gas supply companies are putting the gas on the market not the cylinder, in a similar way to already obligated packaging such as returnable beer kegs or pallets where one company retains ownership along the supply chain. Many of the cylinders, complete with their contents, are used in the industrial supply chain by professional users.

Cylinders are accorded free movement within the European Union so some are supplied full to other European Union countries and some are also imported full. In these cases the cylinder is typically returned and reused.

Some cylinders for export are sold outright to the end users (usually exports outside the European Union).

Gases have hazardous properties and are classified as Class 2 dangerous goods. Consequently, gas cylinders are subject to other legislation, for example the Carriage of Dangerous Goods and Use of Transportable Pressure Equipment Regulations (3) which implements the European Agreement concerning the International Carriage of Dangerous Goods by road (ADR) (8). (ADR) (8) provides a framework for dangerous goods to be carried internationally in road vehicles subject to compliance with standards for the construction, maintenance and testing of the packaging and the labelling of those dangerous goods. These regulations, alongside many established European (CEN) and International (ISO) standards provide a safe system for use which ensures that the gas is safely contained, which regulates the 'end of life' of a cylinder (cylinders are often only scrapped after a failed statutory inspection), and which covers responsible recycling / disposal. In addition, there are industry best practice publications and procedures in place, approved by government bodies, such as the Environment Agency, to recover 'lost' cylinders, as well as industry initiatives to ensure that gases do not get into the hands of non-professional users or are misused.

Gas supply companies mainly supply directly to their customers, but there is also a market in supplying gas cylinders through sales agents / distributors, who do not take ownership of the gas cylinders. In this case the gas industry would retain any obligation associated with the gas cylinder.

Gas supply companies also have a small subset of non-returnable gas cylinders; these are sold to end-users (for example, very small cylinders for analytical laboratories or balloon gas). The gas supply companies have declared these as packaging already and they form part of their existing obligation.



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