



Quality Protocol

Recycled gypsum from waste plasterboard

End of waste criteria for the production and use of recycled gypsum from waste plasterboard





This Quality Protocol was funded by Defra, the Welsh Assembly Government (WAG) and the Northern Ireland Environment Agency (NIEA) as a business resource efficiency activity. It was developed by the Environment Agency and WRAP (Waste & Resources Action Programme) in consultation with Defra, WAG, NIEA, industry and other regulatory stakeholders. The Quality Protocol is applicable in both England and Wales and Northern Ireland. It sets out the end of waste criteria for the production and use of recycled gypsum from waste plasterboard.

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Foreword

Background

The Waste Protocols Project is a joint initiative between the Environment Agency and WRAP (Waste and Resources Action Programme). It is funded by the Department for Environment, Food and Rural Affairs (Defra), the Welsh Assembly Government (WAG) and the Northern Ireland Environment Agency (NIEA) as a business resource efficiency activity.

Uncertainty over the point at which waste has been fully recovered and ceases to be waste within the meaning of Article 3(1) of the EU Waste Framework Directive (2008/98/EC) has inhibited the development and marketing of materials produced from waste which could otherwise be used beneficially without damaging human health and the environment. In some cases, this uncertainty has also inhibited the recovery and recycling of waste and its diversion from landfill.

Interpretation of EU legislation is ultimately a matter for the Courtof Justice of the European Union and there is now a substantial body of case law on the interpretation of the definition of waste. Drawing on the principles established in this case law, it is possible to identify the point at which certain wastes can be regarded as having ceased to be waste and thus when the Waste Framework Directive's waste management controls no longer apply. This identification is the purpose of the Waste Protocols Project.

More specifically, depending on the circumstances of the waste concerned, the Project seeks to achieve the following outcomes:

- to produce a Quality Protocol identifying the point at which waste, having been fully recovered, may be regarded as a non-waste product that can be either reused by business or industry, or supplied into other markets, enabling them to be used without the need for waste management controls; and/or
- to produce a statement that confirms to the business community what waste management controls they must comply with.

What is a Quality Protocol?

A Quality Protocol sets out end of waste criteria for the production and use of a product from a specific waste type. Compliance with these criteria is considered sufficient to ensure that the fully recovered product may be used without undermining the effectiveness of the Waste Framework Directive and therefore without the need for waste management controls.

In addition, the Quality Protocol indicates how compliance may be demonstrated and points to good practice for the use of the fully recovered product. The Quality Protocol further aims to provide increased market confidence in the quality of products made from waste and so encourage greater recovery and recycling.

1. Introduction

Definitions of terms that appear in *italics* when they are first used in this Quality Protocol are given in Appendix A.

1.1 What is this Quality Protocol?

- 1.1.1 This Quality Protocol has been developed by WRAP (Waste & Resources Action Programme) and the Environment Agency in consultation with industry and other regulatory stakeholders. It is applicable in both England, Wales and Northern Ireland.
- 1.1.2 The Quality Protocol sets out end of waste criteria for the production and use of *recycled gypsum* from *waste plasterboard*. If these criteria are met, the resulting outputs will normally be regarded as having been fully recovered and to have ceased to be waste.
- 1.1.3 *Producers* and *users* are not obliged to comply with the Quality Protocol. If they do not, the recycled gypsum will normally be considered to be waste and *waste management controls* will apply to their handling, transport and application.
- 1.1.4 Producers should note that this Quality Protocol does not affect the obligation to hold an environmental permit (or a waste management license if in Northern Ireland) and comply with all of its conditions to process and store waste plasterboard.
- 1.1.5 Producers should also note that by producing a fully recovered product they may be subject to further legal obligations, e.g. REACH¹ registration.

1.2 The purpose of the Quality Protocol

- 1.2.1 The Quality Protocol has four main purposes:
 - i. clarifying the point at which waste management controls are no longer required;
 - ii. providing *holders* with confidence that the recycled gypsum they purchase conforms to an *approved standard*;
 - iii. providing users with confidence that the material is suitable for use in designated applications; and
 - iv. protecting human health and the environment (including soil).

In addition, the Quality Protocol describes acceptable good practice for the use of recycled gypsum.

¹ Waste is exempted from REACH (Registration, Evaluation, Authorisation and Restriction of Chemicals) (Regulation (EC) No 1907/2006) as it is covered by separate waste management controls. However, once waste has been fully recovered and ceases to be waste, waste management controls cease to apply and REACH may apply instead at that point. Unless specifically exempted (e.g. because a substance has already been registered), producers may need to register substances recovered from waste and placed back on the market and make available appropriate hazard and safety information, for example a suitable safety data sheet.

1.3 Complying with the Quality Protocol

- 1.3.1 Recycled gypsum will normally be regarded as having ceased to be waste, and therefore no longer subject to waste management controls, provided it requires no further processing before use, namely;
 - has been produced using only those *input materials* specified in Section 2.3.1; and
 - has been processed in accordance with all the requirements of the approved standards (as listed in Section 2.4.1).
- 1.3.2 Producers must demonstrate that these criteria have been met. They can do this in the ways set out in Section 3 and by maintaining records.
- 1.3.3 This Quality Protocol will be adopted as a technical regulation under *Technical Standards* and *Regulations Directive 98/34/EC* as amended². We recognise that there may be codes of practice or standards which apply in *European Economic Area* (EEA) States other than the UK setting out requirements for the production and use of recycled gypsum. We accept that recycled gypsum may cease to be waste provided it has been produced in compliance with:
 - a relevant standard or code of practice of a national standards body or equivalent body of any EEA State; or
 - any relevant international standard recognised for use in any EEA State; or
 - any relevant technical regulation with mandatory or de facto mandatory application for marketing or use in any EEA State.

These must give levels of product performance, protection of human health and the environment which are equivalent to those required in this Quality Protocol.

1.3.4 An outline of the main stages and control mechanisms of the Quality Protocol is presented in Figure 1. These are described further in Sections 2 and 3.

1.4 When Quality Protocol compliant material may become waste

- 1.4.1 It must be demonstrated that the recycled gypsum is destined for use in one of the designated market sectors. Producers and users of recycled gypsum should note that, even if the Quality Protocol is complied with, the material will become waste again and subject to waste management controls if, for example, it is at any stage:
 - disposed of; or
 - stored indefinitely with little prospect of being used.
- 1.4.2 In addition, if Quality Protocol compliant material is mixed with other waste materials, the resulting mix will be considered to be a waste and subject to waste management controls. However, if Quality Protocol compliant material is mixed with non-waste materials the resulting mix will not be waste. Regulatory controls (other than waste management controls) may apply to the blending activity, for example, when the compliant material is transferred to a brownfield site to be mixed with soils to improve their quality.

² The Technical Standards and Regulations Directive 98/34/EC seeks to ensure the transparency of technical regulations and is intended to help avoid the creation of new technical barriers to trade within the European Community.

1.5 Failure to comply with the Quality Protocol

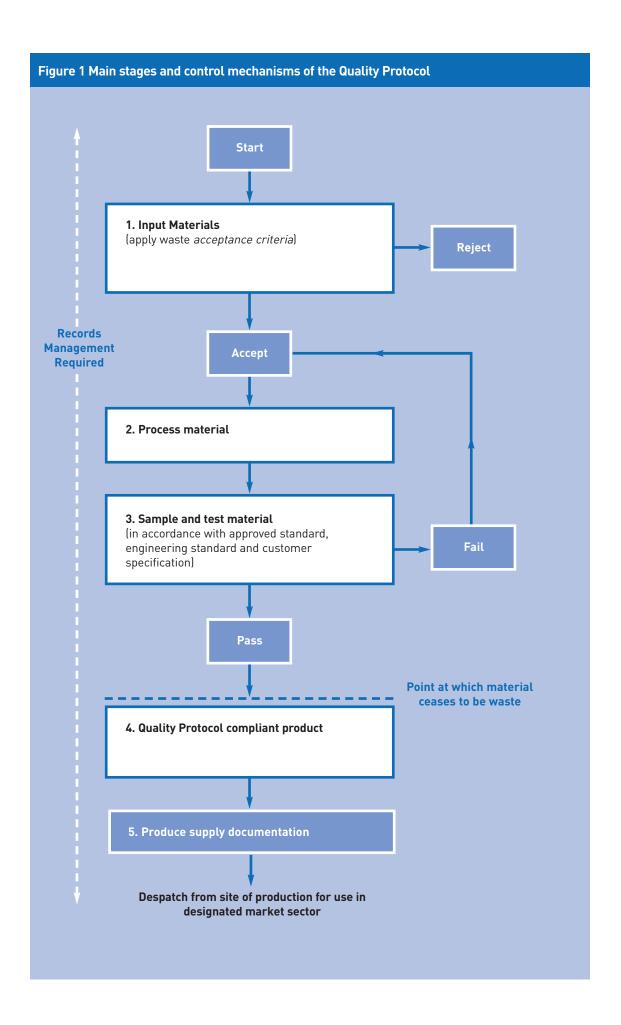
- 1.5.1 Where this Quality Protocol is not complied with, for example the recycled gypsum does not meet an *approved standard* or the producer cannot demonstrate evidence of compliance, the recycled gypsum produced will normally be considered to be waste. In such circumstances, the producer/user must comply with the appropriate waste management controls³ for the transportation, storage and use of the recycled gypsum and may be committing an offence if they do not do so.
- 1.5.2 Detailed guidance on waste management controls can be obtained from the Environment Agency's National Customer Contact Centre on 08708 506 506 or from its website (http://www.environment-agency.gov.uk/subjects/waste/), from Netregs (www.netregs.gov.uk), or by visiting NIEA's website (www.ni-environment.gov.uk/waste-home/authorisation.htm)

1.6 Updating the Quality Protocol

- 1.6.1 We plan to review and update this document every two years from the date of final publication.
- 1.6.2 However, this document may be subject to change before those review dates. Triggers for such a change could include:
 - pollution incidents;
 - a change in the market;
 - a change in legislation or case law; or
 - **a** shift in the chemical composition or physical properties of recycled gypsum.
- 1.6.3 This Quality Protocol may be withdrawn if it becomes apparent that it is generally being misapplied and/or misused.

1.7 Importing and exporting Quality Protocol compliant material

- 1.7.1 Producers intending to export Quality Protocol compliant material should be aware that, although the material may cease to be waste in England, Wales and Northern Ireland, the country of destination may take a different view. Under the Waste Shipment Regulation (EC/1013/2006) if the competent authority in the country of destination considers the material to be waste, the controls specified in that Regulation will apply to the shipment.
- 1.7.2 Producers intending to import Quality Protocol compliant material to England, Wales and Northern Ireland should be aware that if the country of despatch regards the material as waste the controls set out in the Waste Shipment Regulation will apply to the shipment, even though the material may be regarded as having ceased to be waste in England and Wales and Northern Ireland.
- 1.7.3 It is prudent to check with the competent authority for the country of despatch or destination before importing or exporting such material. A list of the competent authorities can be found at http://ec.europa.eu/environment/waste/shipments



2. Producing recycled gypsum

2.1 Regulating the production process

2.1.1 The process of turning waste plasterboard into recycled gypsum is classified as a waste recovery operation and is subject to the waste management controls in the WFD. This Quality Protocol does not affect the obligation by producers to hold an environmental permit that authorises the processing of waste plasterboard and to comply with all the conditions of the environmental permit that applies to waste plasterboard. Similarly, in Northern Ireland the Quality Protocol does not affect the obligation by producers to comply with all the conditions of the PPC permit or waste management licence or exemption.

2.2 Criteria for producing recycled gypsum that has ceased to be waste

- 2.2.1 The following criteria must be met in order to produce recycled gypsum that will normally be regarded as having ceased to be waste.
- 2.2.2 To comply with this Quality Protocol recycled gypsum must require no further processing before use. To do this the following criteria (2.3 to 2.4) must be met. In addition, the material should be destined for use in one or more of the designated applications listed in Section 4.

2.3 Input materials

2.3.1 The input materials must be limited to waste plasterboard as defined in Appendix A of this Quality Protocol. Other waste materials are not permitted.

2.4 Processed in accordance with the approved standards

2.4.1 The producer must comply with all the requirements of an approved standard. Appendix B lists the approved standards at the time of publishing this Quality Protocol. Additional standards may be approved by the Environment Agency or NIEA for inclusion to this Quality Protocol when it is reviewed.

Producers should be aware that standards are subject to regular periodic review and should ensure they comply with the latest version.

3. Providing evidence of compliance with the Quality Protocol

- 3.1 Producers must be able to demonstrate compliance with all the requirements of this Quality Protocol.
- 3.2 Some of the records specified may already be required as part of the producer's environmental permit conditions or if in Northern Ireland, waste management licence or exemption. This Quality Protocol does not affect the obligations on producers to comply with environmental permit conditions or waste management licence or exemption conditions if in Northern Ireland

3.3 Records management

- 3.3.1 Records must be kept of all incoming wastes which are accepted for the purpose of producing recycled gypsum.
- 3.3.2 Producers should also retain records of all inspection and testing carried out.
- 3.3.3 Producers should maintain records of each sale or supply of recycled gypsum. This documentation must include:
 - date of supply;
 - customer's name and contact details plus nature of business;
 - details of the designated application for which the material is destined;
 - producer's name and contact details (including the address of the processing site);
 - quantity by weight/volume;
 - a copy of a material safety data sheet⁴ (MSDS);
 - the approved standard with which the recycled gypsum supplied complies;
 - date of last test to approved standard;
 - a statement that the recycled gypsum product was produced in compliance with this Quality Protocol; and
 - information on good practice relating to the storage, transportation and use of recycled gypsum.
- 3.3.4 These requirements are additional to any statutory record-keeping obligations. However, some records may be used to fulfil both a regulatory obligation and evidence of compliance with the Quality Protocol.
- 3.3.5 For the purposes of this Quality Protocol the producer must:
 - keep and retain specified records for a minimum of two years; and
 - make them available for inspection by the regulator (if requested).

4. Application and use of recycled gypsum

4.1 Designated applications

- 4.1.1 This Quality Protocol applies to the use of recycled gypsum in the following market applications:
 - as a raw material in the manufacture of new gypsum-based products, e.g. plasterboard and coving;
 - as a soil treatment agent for agricultural benefit; and
 - as a raw material in the manufacture of cement.

4.2 General good practice for the use of recycled gypsum

- 4.2.1 Good practice guidance should be followed in relation to the storage, handling and use of recycled gypsum, notably:
 - adopt good practice with regard to the record-keeping, storage, use and disposal of gypsum products and waste;
 - ensure appropriate personal protective equipment is used during the application of recycled gypsum to mitigate against any potential irritant effects of the material; and
 - to prevent any potential contamination of controlled water resources, gypsum should be stored in a contained area, under cover, protected from flooding and with protection against release to drains or surface water.

4.3 General good practice for the agricultural use of recycled gypsum

- 4.3.1 Primarily, users of recycled gypsum should follow all relevant current agricultural good practice in order to ensure that:
 - it does not pose a risk to the environment; and
 - its use does not compromise the future sustainable use of the soil to which it is applied.
- 4.3.2 The recycled gypsum producer or user should be able to demonstrate that they have taken full account of any environmental impact resulting from its use.
- 4.3.3 Details of good practice for the testing, record-keeping (including responsibility for record keeping) and application of recycled gypsum in relation to agriculture is given in Appendix C.

In this Quality Protocol, the words and phrases below have the following meanings:				
Term	Description			
Acceptance criteria	Written procedures that set out the process for identifying types and quality of waste which may be accepted as an input to the production process. The process for rejecting loads is also included in acceptance criteria.			
Approved standard	The standards listed in Appendix B and any other standard approved by the Environment Agency or NIEA for inclusion in this Quality Protocol.			
Designated application(s)	The application(s) listed in Section 4 in which this Quality Protocol enables recycled gypsum to be used without the requirement to comply with waste management controls.			
Designated market sector(s)	The sector(s) listed in Section 4 in which this Quality Protocol enables recycled gypsum to be used.			
European Economic Area (EEA)	The EEA States consist of the members of the EU (Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, The Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden and the UK) together with Iceland, Liechtenstein, Norway and Switzerland. Although the Channel Islands and the Isle of Man are part of the UK, they are not part of the EU and businesses registered there are subject to different licensing legislation.			
Environmental permit	Environmental permits or exemptions issued under the Environmental Permitting (England and Wales) Regulations 2007, which came into force on 6 April 2008, or a position adopted by the Environment Agency in accordance with its guidance on the regulation of low-risk activities.			
	From 6 April 2008, the following automatically become environmental permits:			
	 PPC permits issued under the Pollution Prevention and Control (England and Wales) Regulations 2000 (as amended); and Waste Management Licences (WMLs) issued under the Environmental Protection Act 1990 (as amended). 			
	Exemptions from the need for a Waste Management Licence, registered under Regulation 18 and Schedule 3 of the Waste Management Licensing Regulations 1994 (as amended) will now come under schedule 3 of the Environmental Permitting (England and Wales) Regulations 2007.			
Holder	An individual or company that distributes and/or stores recycled gypsum but are discrete from either the production or end use of it.			
Input material	The only permitted input materials are those that conform to the definition of plasterboard given in paragraph 3.12 of PAS 109:2008.			
Land manager	The person responsible for the exploitation of the agricultural land concerned, on his or her own account, directly and/or through the use of agents or contractors (England and Wales).			
Material safety data sheet (MSDS)	A document containing health and safety information on a hazardous product. It includes the chemical and common names of all ingredients that have been determined to be health hazards if they constitute 1 per cent or greater of the product's composition (0.1 per cent for carcinogens). Also includes precautionary guidelines and emergency procedures for handling the product.			

Term	Description	
Northern Ireland Environment Agency (NIEA)	Northern Ireland Environment Agency (NIEA) is the leading public body in Northern Ireland responsible for protecting, conserving and promoting the natural environment and built heritage in Northern Ireland.	
Nitrates Action Programme (NAP) Regulations (Northern Ireland) 2010 SR 411	In Northern Ireland the NAP Regulations protect water against nitrate pollution from agricultural sources, through controls on activities including spreading fertiliser and storing manure.	
Potentially Toxic Element (PTE)	t Chemical element that has potential to have toxic effects on humans, flora or fauna. Some PTEs are also known as 'heavy metals' or 'transition metals' (e.g. lead, cadmium, chromium, mercury, copper, zinc and nickel).	
PPC Permit (Northern Ireland)	A permit issued under the Pollution Prevention and Control Regulations (Northern Ireland) 2003 SR 46. Establishes a pollution control regime for certain installations or mobile plants and includes combustion activities.	
Producer	An individual or company that processes waste plasterboard to produce recycled gypsum.	
Recycled gypsum applications.	Gypsum recovered from waste plasterboard consistent with the definition in Section 3 of PAS 109:2008, which has been processed to produce a gypsum product suitable for use in designated end use	
Technical Standards and Regulations Directive 98/34/EC	Seeks to ensure the transparency of technical regulations and is intended to help avoid the creation of new technical barriers to trade within the European Community.	
Users	Individuals or organisations that obtain recycled gypsum from a producer or third party with the intention of using those materials for a designated application.	
Waste management controls	Controls under legislation that govern the treatment, handling, containment and storage of waste.	
Waste management licence or exemption	An authorisation issued in Northern Ireland under the Waste Management Licensing Regulations (Northern Ireland) 2003 for the storage, treatment or disposal of waste.	
Waste Management Licensing Regulations (Northern Ireland) 2003	Provides for applications in Northern Ireland for waste management licences, which authorise the deposit, disposal and treatment of controlled waste. Includes exemptions from waste management licensing.	
Waste plasterboard	Waste plasterboard consistent with the definition in Section 3 of PAS 109:2008.	

Appendix B: Approved standards

All producers of recycled gypsum must be able to demonstrate compliance with both the following environmental and quality standards.

B1 Environmental standard: the composition of recycled gypsum

In order to meet with this standard all recycled gypsum should:

- be sampled in accordance with Paragraph 8.2 of PAS 109:2008;
- be analysed for the metal suite in Table B1 based on the following criteria:
 - i. processors accepting clean material e.g. offcuts, production waste etc. should analyse the material every 1,000 tonnes or once per annum whichever is sooner; and
 - processors accepting other material such as demolition waste, mixtures of demolition waste and clean material etc. should analyse the material either every 1,000 tonnes or once per 3 months whichever is sooner; and
- not exceed the maximum metal and metalloid values in Table B1.

Table B1 Maximum metal and metalloid values in gypsum from waste			
values (mg/kg)			

Source: Risk assessment for applications of gypsum from recycled plasterboard, WRc, 2008.

Analysis for the analytes listed in Table B1 should be carried out via an aqua regia digestion⁵.

B2 Quality standard: specification for the production of recycled gypsum from waste plasterboard (PAS 109:2008)

All recycled gypsum from waste plasterboard shall be produced in accordance with the British Standards Institution's Publicly Available Specification for the production of recycled gypsum from waste plasterboard (BSI PAS 109:2008) and any subsequent revisions.

Copies of BSI PAS 109:2008 can be obtained free from WRAP at http://www.wrap.org.uk or by phoning 0808 100 2040.

 $^{^{\}mathtt{5}}$ Aqua regia digestion is an analytical technique – your laboratory will be able to advise you further.

Appendix C: Application and testing requirements for using recycled gypsum in agriculture

Application requirements

- Advice should be taken from an adviser qualified under the Fertiliser Advisers Certification and Training Scheme (FACTS). Further information on this scheme is available from http://www.factsinfo.org.uk/facts/
- Any application of recycled gypsum should conform to the requirements set out in the Codes of Good Agricultural Practice (CoGAP)⁶ (or subsequent guidance) for air, water and soils. In particular, recycled gypsum should not be spread onto land within 10 metres of open drains, ditches, streams and rivers. In Northern Ireland the application of recycled gypsum should comply with the requirements of Regulation 7 of the Nitrates Action Programme Regulations (Northern Ireland) 2010 (i.e. not within 2m of any waterway)⁷
- Gypsum applications should be matched to crop nutrient requirement, growth stage and prevailing weather conditions, and be made in accordance with the guidance set out in Fertiliser recommendations for agricultural and horticultural crops (RB209)7.
- Applications should adhere to the soil *potentially toxic element* (PTE) limit values set out in the Code of Practice for Agricultural Use of Sewage Sludge (the Sludge Code)⁸.
- Recycled gypsum should not be spread onto land within 50 metres of a potable groundwater borehole. Nor should it be used below the groundwater table or at a depth where there is a foreseeable risk of it coming into contact with groundwater during seasonal variations. In Northern Ireland the application of recycled gypsum should comply with the requirements of Regulation 7 of the Nitrates Action Programme Regulations (Northern Ireland) 2010 (i.e. not within 50m of a borehole, spring or well).
- Producers and users must ensure any surface run-off from any stored gypsum or stockpiles of recycled gypsum is prevented from causing pollution. If necessary containment or barrier measures should be put in place to prevent run-off to land.

Sampling and analysis requirements

- All chemical analysis should be carried out by laboratories using appropriate methods that are accredited by UKAS to ISO/IEC 17025 for the Environment Agency's MCERTS performance standard for the chemical testing of soil.
- Soil sampling for major nutrients should be carried out regularly. Gypsum should not be applied unless the soil has been analysed within the last 5 years (in accordance with RB209).
- Nutrient analysis should include extractable phosphorous (Olsen method), available potassium, available magnesium and total sulphur.
- Nitrogen should be calculated using Soil Nitrogen Supply except where RB209 requires soil analysis.
- The gypsum producer should arrange for the gypsum to be analysed, and the land manager should arrange for the receiving soil to be analysed, for PTEs to ensure that the limit values set out in the Sludge (Use in Agriculture Regulations) 1989 [the Sludge (Use in Agriculture) Regulations (Northern Ireland) 1990, if in Northern Ireland] are not exceeded.

⁶ http://www.defra.gov.uk/FARM/environment/cogap/index.htm

⁷http://www.legislation.gov.uk/nisr/2010/411/contents/made

⁸ http://www.defra.gov.uk/farm/environment/land-manage/nutrient/fert/rb209/index.htm

http://www.defra.gov.uk/environment/water/quality/sewage/pdf/sludge-cop.pdf

¹⁰ http://publications.environment-agency.gov.uk/pdf/GEH00203BKAY-e-e.pdf

http://www.opsi.gov.uk/si/si1989/UKsi_19891263_en_1.htm

Soil analysis for PTEs should be carried out before the first application of gypsum and again when the predicted concentrations approach 75 per cent of the limit values set out in the Code of Practice for the Agricultural Use of Sewage Sludge.

Records to be kept in agriculture

When recycled gypsum is to be used in agriculture, the details listed in Table C1 should be kept by the land manager and made available to the regulator on request.

Table C1 Records to be kept by the land manager				
Parameter		Format		
Quantity of gypsum received		tonnes		
Batch code of gypsum received		code		
Typical gypsum PTE concentrations (provided by gypsum producer)		mg/kg		
Initial soil PTE analysis		mg/kg dry weight		
Calculated soil PTE content (based on all subsequent additions of gypsum including current year)		mg/kg dry weight		
Soil nutrient analysis		mg/kg dry weight		
Date of application		dd/mm/yyyy		
Rate of application		tonne/ha		
Area over which gypsum is incorporated		ha		
Incorporation depth		cm		
Total quantity of gypsum applied		tonnes		
Location of application	Whole field application	Rural Land Register – England (RLR) or Land Parcel Identification System – Wales (LPIS) number. Where this is not available an eight-figure grid reference (or eight figure Irish Grid reference in Northern Ireland) for the centre of the field should be used.		
	Part field application	Eight-figure grid reference (or eight firgure Irish Grid reference in Northern Ireland) for the centre of the area to which the gypsum is applied.		

Responsibility for record-keeping

To demonstrate that the material is used in the right way and that the environment is protected, the land manager receiving the recycled gypsum is responsible for ensuring that the records detailed in Table C1 are made. This applies even if a contractor (e.g. the gypsum producer) carries out the application of the gypsum and/or soil testing for the land manager.

The land manager should also keep the records specified in Table C1 so as to be able to demonstrate that soil resources are being sufficiently protected.

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