

## Quality Protocol

# Processed Fuel Oil (PFO)

End of waste criteria for the production and use of processed fuel oil  
from waste lubricating oils



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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, industry and other regulatory stakeholders. The Quality Protocol is applicable in both England, Wales and Northern Ireland. It sets out end of waste criteria for the production and use of processed fuel oil from waste lubricating oils.

## Contents

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Foreword	01
1. Introduction	02
2. Producing processed fuel oil from waste lubricating oils	06
3. Providing evidence of compliance with the Quality Protocol	07
4. Use of processed fuel oil	08
<b>Appendix A</b>	
Definitions	09
<b>Appendix B</b>	
Acceptable input types	10
<b>Appendix C</b>	
Standards and specifications to which this Quality Protocol applies	12
<b>Appendix D</b>	
Oil Care Campaign Licensed Quality Mark	15
<b>Appendix E</b>	
Routine deliveries: guidance concerning the provision of a producer's statement of conformation with the Quality Protocol	17

# Foreword

## Background

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 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 courts and there is now a substantial body of case law on the interpretation of the definition of waste in Article 3(1) of the Waste Framework Directive. Drawing on the principles established in this case law, it is possible to identify the point at which certain wastes cease 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 it 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.

Following the Court of Appeal judgement in *OSS Group Ltd v Environment Agency* (2007) the Court suggested that Defra and the Environment Agency should provide practical guidance for those affected on what it referred to as "the end of waste test"<sup>1</sup>.

The Environment Agency decided that this guidance should take the form of a Quality Protocol, and established a Technical Advisory Group comprising relevant industry specialists and Government departments to examine this issue fully and provide the basis for such guidance.

The methodology used was to be analogous to that applied to previous Quality Protocols produced by the Waste Protocols Project.

## 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, a 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.

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<sup>1</sup>The appeal concerned the limited question '...whether a lubricating oil, thus not originally used as a fuel, which becomes waste can thereafter be burnt other than as waste...'. The conclusion was that, in order for a waste to cease to be waste 'it should be enough that the holder has converted the waste material into a distinct, marketable product, which can be used in exactly the same way as an ordinary fuel, and with no worse environmental effects'.

# 1. Introduction

## 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 This Quality Protocol sets out end of waste criteria for the production and use of *processed fuel oil (PFO)* from *waste lubricating oils (WLO* – see definition in Appendix A)). If these criteria are met, PFO will normally be regarded as having been fully recovered and to have ceased to be waste because:
- it has been converted into a distinct, marketable product;
  - it can be used in exactly the same way as the relevant virgin equivalent fuel oil described in BS2869:2006<sup>2</sup>; and
  - it can be used with no worse environmental effects than that equivalent.
- 1.1.3 *Producers* and *users* of waste derived fuel oil are not obliged to comply with the Quality Protocol. If they do not, the fuel oils they produce will normally be considered to be waste and *waste management controls* will apply to their handling, transport and use. Furthermore, the Waste Incineration Directive will apply to their combustion.
- 1.1.4 Producers of PFO should note that this Quality Protocol does not affect the obligation to hold an *environmental permit* (in Northern Ireland a *waste management licence or exemption* or a *PPC permit* may be required) and comply with all of its conditions to store and process waste lubricating oils.(see definition in Appendix A)
- 1.1.5 Producers of PFO should also note that by producing a fully recovered product they may be subject to further legal obligations, e.g. the registration of substances under REACH<sup>3</sup>.

## 1.2 The purpose of the Quality Protocol

- 1.2.1 This Quality Protocol has three main purposes:
- i. to clarify the point at which PFO ceases to be waste and waste management controls, including the Waste Incineration Directive's controls, are no longer required;
  - ii. to provide users with confidence that the PFO they purchase conforms to an *approved standard*;
  - iii. to protect human health and the environment.

## 1.3 Complying with the Quality Protocol

- 1.3.1 PFO will normally be regarded as having ceased to be waste, and therefore no longer subject to waste management controls, including the Waste Incineration Directive's controls, provided it:
- has been produced in a site permitted to conduct such operations;;
  - requires no further processing before use;
  - has been produced using only those input materials specified in Appendix B; and
  - meets the requirements of an approved standard (see Section 2).
- 1.3.2 Producers must demonstrate that these criteria have been met. They will do this in the ways set out in Section 3, which include maintaining records.

<sup>2</sup>Amendments to BS2869:2006 has resulted in later editions (e.g. BS2869:2010) that reflect changes in application notably for a Class D oil widening its use to include that for Stationary Engines. In this context a PFO Class D fuel would not normally be expected to satisfy that specific condition and the supplier should therefore be consulted prior to its use.

<sup>3</sup>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.

1.3.3 This Quality Protocol is adopted as a technical regulation under *Technical Standards and Regulations Directive 98/34/EC* as amended<sup>4</sup>. 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 waste lubricating oil-derived fuels. We accept that waste lubricating oil-derived fuels may cease to be waste provided they have 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 provide levels of product performance and protection of human health and the environment which are equivalent to those required in this Quality Protocol. We recommend that prior discussions take place with the Environment Agency.

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 Producers and users of PFO should note that, even if the Quality Protocol is complied with, the material may become waste again and subject to waste management controls if it is at any stage:

- discarded or disposed of; or
- stored indefinitely with little prospect of being used.

1.4.2 In addition, if Quality Protocol compliant materials are mixed with waste materials, the resulting mix will be considered to be a waste and subject to waste management controls. However, if Quality Protocol compliant outputs are mixed with other non-waste materials the resulting mix will not, as a result of this, be waste.

#### **1.5 Failure to comply with the Quality Protocol**

1.5.1 Where this Quality Protocol is not complied with, for example the PFO does not meet an approved standard, or the producer or supplier or user cannot demonstrate evidence of compliance, the PFO will normally be considered to be waste. In such circumstances, the holder or user must comply with the appropriate waste management and Waste Incineration Directive controls for the transportation, storage and use as fuel of the PFO and may be committing an offence if they do not do so.

1.5.2 Detailed guidance on waste management controls and the Waste Incineration Directive 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/>) In Northern Ireland guidance can be obtained from NIEA's website (<http://www.nienvironment.gov.uk/waste-home.htm>)

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<sup>4</sup>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.

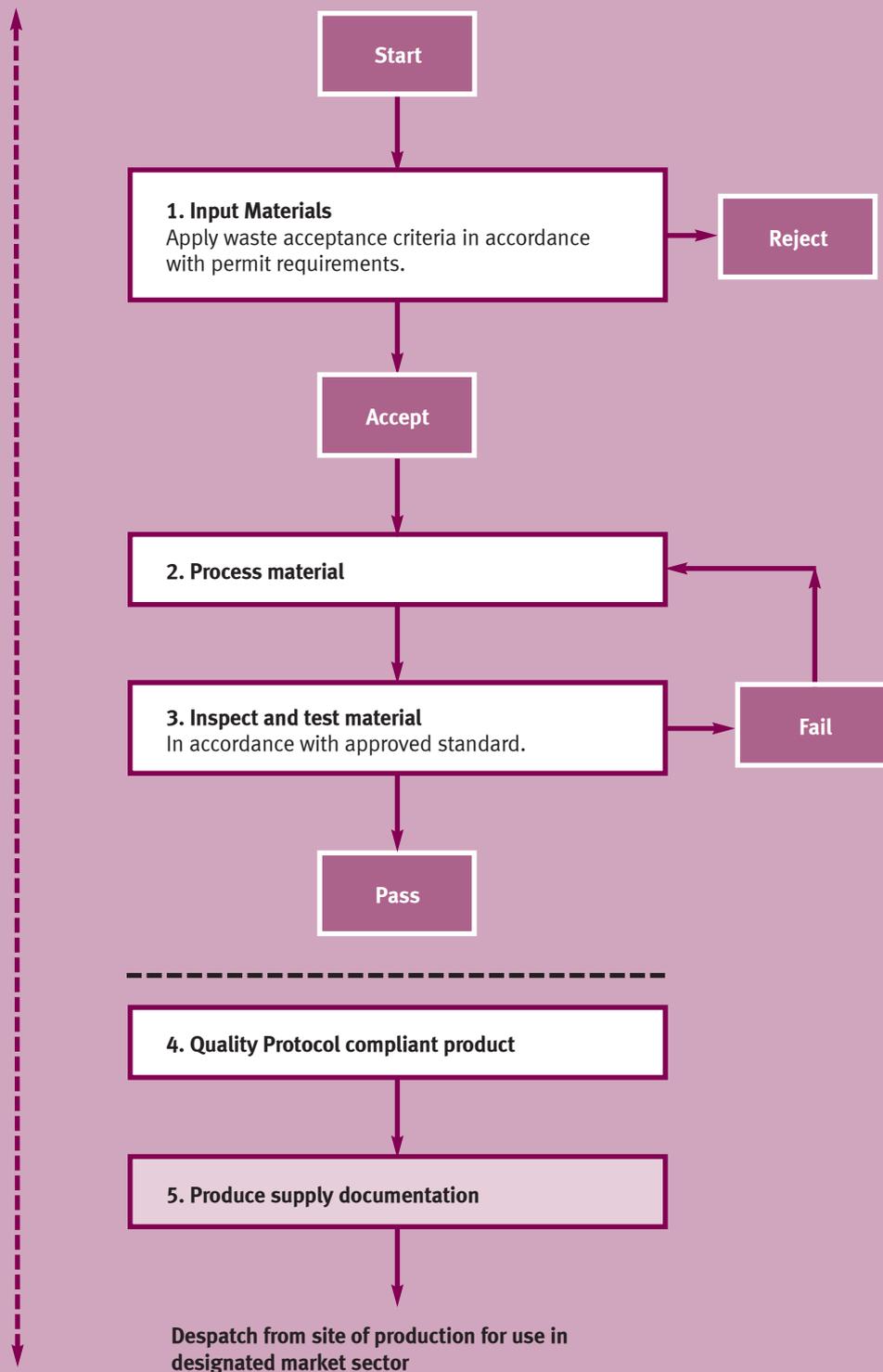
## 1.6 Updating the Quality Protocol

- 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 the review dates. Triggers for change may include:
- pollution incidents;
  - a change in the market;
  - a change in legislation or case law; and
  - significant changes in the chemical composition or physical properties of waste lubricating oil inputs; and
  - new evidence that supplies of PFO cannot be considered comparable to conventional fuels in terms of their environmental or health impact performance
- 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 materials to England, Wales or Northern Ireland should be aware that if the country of dispatch 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, Wales and Northern Ireland.
- 1.7.3 As such it is prudent to check with the competent authority for the country of despatch or destination before importing or exporting PFO. A list of the relevant European competent authorities can be found at: [http://ec.europa.eu/environment/waste/shipments/pdf/list\\_competent\\_authorities.pdf?lang=\\_e](http://ec.europa.eu/environment/waste/shipments/pdf/list_competent_authorities.pdf?lang=_e)

Figure 1 Main stages and control mechanisms of the Quality Protocol



**Key**  
 Point at which material ceases to be waste  
 -----  
 Records management required  
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## 2. Producing processed fuel oil from waste lubricating oils

### 2.1 Regulating the production process

2.1.1 The process of turning WLO (see definition in Appendix A) into PFO is classified as a waste recovery operation and is subject to the waste management controls in the Waste Framework Directive and domestic legislation. This Quality Protocol does not affect the obligation on producers to hold an environmental permit (in Northern Ireland a waste management licence or exemption or a PPC permit may be required) that authorises the storage and processing of WLO and to comply with its conditions.

### 2.2 Criteria for producing PFO that has ceased to be waste

2.2.1 To comply with this Quality Protocol PFO must require no further processing before use. To do this the criteria outlined in Sections 2.3 and 2.4 must be met.

### 2.3 Input materials

2.3.1 The PFO must be produced using only those input materials specified in Appendix B of this Quality Protocol.

2.3.2 The waste lubricating oil processor should be mindful of the required standard for the processed fuel oil product when accepting waste lubricating oil inputs as there will be limitations to what the process can achieve and therefore accept as feedstock. Appendix B therefore represents the minimum *acceptance criteria*.

### 2.4 Processed in accordance with the approved standards

2.4.1 The producer must meet all the requirements of the standards listed in Appendix C using the approved and accredited test methods. From time to time additional standards may be required by the Environment Agency for inclusion in this Quality Protocol – such standards will be introduced following a review as described in Section 1.6.2.

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

### 2.5 Product performance

2.5.1 This Protocol sets out to ensure that producers and users of PFO understand when we will consider the PFO to be a non-waste. It is a matter of agreement between the supplier and user/holder of the PFO as to its suitability for a specific service application.

### 2.6 Additional customer specifications

2.6.1 In addition to the criteria set in sections 2.3 to 2.4, users or holders may therefore request that supplies of PFO meet additional technical requirements, but this is not material to compliance with this Protocol.

## 3. Providing evidence of compliance with the Quality Protocol

- 3.1 Producers must be able to demonstrate compliance with the requirements of this Quality Protocol.
- 3.2 Some of the required records to demonstrate conformance may also be required as part of the producer's environmental permit (or in Northern Ireland their waste management licence or exemption or PPC permit) conditions. This Quality Protocol does not affect the obligations on producers to comply with the environmental permit (or in Northern Ireland their waste management licence or exemption or PPC permit) conditions and requirements of regulations.
- 3.3 It is incumbent upon the PFO producer to organise his records in a way that readily illustrates overall conformance with this Protocol.

### 3.4 Certification

- 3.4.1 Compliance can be demonstrated by obtaining the Oil Care Campaign Licensed Quality Mark. This Quality Mark can only be used by those PFO producers who demonstrate full compliance with the Quality Protocol and in addition meet certain minimum operating standards as detailed in Appendix D.
- 3.4.2 The Oil Recycling Association (ORA) together with the Oil Care Campaign has produced a quality assurance scheme that is considered best practice.
- 3.4.3 These requirements are additional to any statutory record-keeping requirements under waste management controls.
- 3.4.4 Routine Certification of Compliance for Deliveries of PFO

Appendix E provides guidance concerning the information that must be routinely made available to users of a PFO.

### 3.5 Records management

- 3.5.1 Records must be kept of all incoming wastes intended for the purpose of producing PFO. As a minimum, a record of each load delivered to site must be kept giving:
  - date of receipt;
  - *European Waste Catalogue (EWC)* code and description;
  - place of origin (where known);
  - hazardous waste consignment note number;
  - quantity by weight/volume;
  - description to show that it is suitable for the process (see Section 2);
  - carrier's name and contact details;
  - supplier's name and contact details; and
  - whether the load was accepted.
- 3.5.2 Testing of PFO must be undertaken in accordance with the approved standards as outlined in Appendix C. Producers should retain records of all inspection and testing carried out for compliance with the approved standards.

- 3.5.3 Producers must also retain records of each sale or supply of PFO. This *supply documentation* must include the following elements for the make up and recovery of each batch produced including:
- date of supply;
  - customer's name, contact details and nature of business;
  - producer's name and contact details (including address of processing site);
  - intended use (see Section 4);
  - quantity supplied by weight/volume;
  - the approved standard with which the PFO supplied complies;
  - a statement (see example in Appendix E) that the PFO was produced in compliance with this Quality Protocol; and
  - information on good practice relating to the storage, transportation and use of PFO.
- 3.5.4 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.
- 3.5.5 For the purposes of this Quality Protocol the producer must keep and retain specified records for a minimum of four years.

## 4. Use of processed fuel oil

- 4.1 The essential purpose of this Quality Protocol is to clarify when fuels derived from WLO can cease to be waste. Any reference to BS2869:2006 or any other standard is made only in this context. This protocol is not guidance on PFO's suitability for use or indicative of performance in any particular application, appliance or equipment.
- 4.2 Compliance with the QP does not guarantee the acceptability of the fuel for all applications especially where the combustion residues may become part of the product being produced for example by direct heating. It remains the responsibility of the process operator to ensure that any contaminants which may be transferred from the fuel used do not pose an unacceptable environmental or health risk.
- 4.3 To comply with this protocol the PFO must comply with the appropriate standard in Appendix C.
- 4.4 Appendix C distinguishes between distillate oil (e.g. gas-oil) equivalent and residual oil (e.g. heavy fuel oil (HFO)) equivalent classes of PFO. A WLO derived fuel that meets all the given criteria for a distillate oil equivalent can be sold or supplied for use in any application where virgin oil use is allowed and appropriate.
- 4.5 A WLO derived fuel that meets all the given criteria for a residual oil equivalent can only be sold or supplied for use in any application where it is a direct substitute for a residual oil (e.g. HFO), i.e. it cannot be used where the use of a residual type of fuel is not appropriate or allowed.

### 4.6 Fuels manufactured from waste

- 4.6.1 PFO is characterised as a 'fuel manufactured from waste' and its combustion will therefore be regulated under Section 1.1 of Part 2 of Schedule 1 of the Environmental Permitting (England and Wales) Regulations 2007 (EPR). In Northern Ireland the combustion of PFO may require a PPC permit.

## Appendix A Definitions

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 will also be included in acceptance criteria.
Approved standard	The standards listed in Appendix C and any other standard approved by the Environment Agency for inclusion in this Quality Protocol. The latest version must always be used.
Distillate oil equivalent	A petroleum distillate product meeting the standard set out in BS2869:2006, Class D fuel and the additional parameters set out in Appendix C of this Quality Protocol.
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.
Environment Agency	The Environment Agency is the leading public body for protecting and improving the environment in England and Wales. Its job is to make sure that air, land and water are looked after by everyone in today's society, so that tomorrow's generations inherit a cleaner, healthier world.
Environmental permit	Environmental permits issued or exemptions registered 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.
European Waste Catalogue (EWC)	European Waste Catalogue (EWC 2002 and amendments) - comprehensive list of waste codes and descriptions based on waste source and type.
Northern Ireland Environment Agency (NIEA)	NIEA is the leading public body in Northern Ireland responsible for protecting, conserving and promoting the natural environment and built heritage in Northern Ireland.
PPC Permit	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(s)	The operators who undertake the production process.
Processed fuel oil (PFO)	Waste lubricating oil (WLO) that has been processed in accordance with this Quality Protocol.
Residual oil equivalent	A residual petroleum product meeting the standard set out in BS2869:2006, Class E, F or G fuel and the additional parameters set out in Appendix C of this Quality Protocol.

Term	Description
Supply documentation	Batch make up and recovery records of who the processed fuel oil is supplied to, including the documentation accompanying each load or consignment of processed fuel oil. It will detail the chosen standard to which the product complies, associated analytical results and a statement that the processed fuel oil was produced in conformance with this Quality Protocol.
Test methods	These shall be to the latest applicable version unless specifically dated.
Technical Standards and Regulations Directive 98/34/EC	An EU standard that 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.
User(s)	The individuals or organisations that obtain processed fuel oil from a producer complying with this Quality Protocol.
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 lubricating oil(s)	Refers to any waste lubricating oil or other oils suitable for recovery as a mineral oil type fuel substitute, as set out in the European Waste Catalogue (attached as Appendix B).
WRAP (Waste & Resources Action Programme)	WRAP's vision is a world without waste, where resources are used sustainably. We work with businesses and individuals to help them reap the benefits of reducing waste, develop sustainable products and use resources in an efficient way.
Waste Management Licensing Regulations (Northern Ireland) 2003	Provides for applications in Northern Ireland for waste management licenses, which authorise the deposit, disposal and treatment of controlled waste. Includes exemptions from waste management licensing.

## Appendix B Description of waste lubricating oils that are acceptable inputs for the production of PFO

Acceptable inputs for the production of PFO	
Waste type (EWC code) <sup>5</sup>	Description
<b>12</b>	<b>Wastes from shaping and physical and mechanical surface treatment of metal and plastics</b>
<b>12 01</b>	<b>Wastes from shaping and physical and mechanical surface treatment of metals and plastics</b>
12 01 07*	Mineral based machining oils free of halogens (except emulsions and solutions)
12 01 10*	Synthetic machining oils
12 01 19*	Readily biodegradable machining oil

<sup>5</sup>Each waste type is assigned a six digit EWC code made up of three, two digit sub-codes. Acceptable inputs are only those specific waste types listed, as identified by a full six digit EWC code. The first two digit sub-code (EWC chapter) describes the type of process and the second two digit sub-code (EWC sub-chapter) describes the industry or sector from which a waste type arises. Two and four digit sub-codes are shown for information purposes only.

\* indicates that the waste type is considered to be hazardous waste.

<b>Waste type (EWC code)<sup>4</sup></b>	<b>Description</b>
<b>13</b>	<b>Oil wastes and wastes of liquid fuels (except edible oils, and those in chapters 05, 12 and 19)</b>
<b>13 01</b>	<b>Waste hydraulic oils</b>
13 01 10*	Mineral based non-chlorinated hydraulic oils
13 01 11*	Synthetic hydraulic oils
13 01 12*	Readily biodegradable hydraulic oils
13 01 13*	Other hydraulic oils
<b>13 02</b>	<b>Waste engine, gear and lubricating oils</b>
13 02 05*	Mineral-based non-chlorinated engine, gear and lubricating oils
13 02 06*	Synthetic engine, gear and lubricating oils
13 02 07*	Readily biodegradable engine, gear and lubricating oils
13 02 08*	Other engine, gear and lubricating oils
<b>13 03</b>	<b>Waste insulating and heat transmission oils</b>
13 03 07*	Mineral-based non-chlorinated insulating and heat transmission oils
13 03 08*	Synthetic insulating and heat transmission oils
13 03 09*	Readily biodegradable insulating and heat transmission oils
13 03 10*	Other insulating and heat transmission oils
<b>13 04</b>	<b>Bilge oils</b>
13 04 01*	Bilge oils from inland navigation
13 04 02*	Bilge oils from jetty sewers
13 04 03*	Bilge oils from other navigation
<b>13 05</b>	<b>Oil/water separator contents</b>
13 05 02*	Sludges from oil/water separators
13 05 03*	Interceptor sludges
13 05 06*	Oil from oil/water separators
13 05 08*	Mixtures of wastes from grit chambers and oil/water separators
<b>13 07</b>	<b>Wastes of liquid fuels</b>
13 07 01*	Fuel oil and diesel
13 07 03*	Other fuels (including mixtures)
<b>19</b>	<b>Wastes from waste management facilities, off-site waste water treatment plants and the preparation of water intended for human consumption and water for industrial use</b>
19 02	Wastes from physico/chemical treatments of waste (including dechromatation, decyanidation, neutralisation)
19 02 07*	Oil and concentrates from separation
<b>20</b>	<b>Municipal wastes (household waste and similar commercial, industrial and institutional wastes) including separately collected fractions</b>
<b>20 01</b>	<b>Separately collected fractions (except 15 01)</b>
20 01 26*	Oil and fat other than those mentioned in 20 01 25

Appendix B illustrates the broad classes of permitted waste oil types but does not define the suitability of these inputs for manufacturing a PFO in terms of either physical or chemical compatibilities.

## Appendix C Standards and specifications to which this Quality Protocol applies

Waste lubricating oil may be processed into a replacement fuel for either distillate oil or residual fuel oil.

To demonstrate compliance with the relevant Standards and Specification of the Quality Protocol analysis of each batch of processed fuel must be carried out prior to dispatch from the Producer's Permitted Facility.

All sampling procedures must be performed and undertaken by an ISO 17025 accredited body, to IP 475 or similar approved and accredited method.

All analysis must be performed and undertaken by an ISO 17025 accredited laboratory using accredited test methods.

'Accredited test methods' means that the accreditation of the testing laboratory and its approved test methods must be carried out by a body that is a signatory to the EA Multilateral agreement (MLA) (in the UK this is UKAS).

'Approved test methods' means those test methods that are included in Table 1 or Table 2 of the Quality Protocol or additional methods that are approved in writing by the Environment Agency.

For the avoidance of doubt, only approved test methods included on an ISO 17025 accredited laboratory's schedule of accreditation, may be used to validate compliance of Processed Fuel Oil with the Standards and Specifications of the Quality Protocol.

### Testing

Properties of the product shall as appropriate not exceed the maximum nor be less than the minimum values set out in the relevant Table 1 or Table 2.

Samples must be analysed by producers of each batch; if additions are made to a batch tank then it becomes a new batch and should be re-analysed.

### Test Precision

The use of test precision data is required to be that according to the IP367 (ISO 4259) procedure and shall be used for the interpretation of test results.

#### **C1 Standard for a distillate oil equivalent**

The primary requirement for a PFO non-waste distillate oil equivalent is to meet the parameters set in the most up to date version of the British Standard (BS2869:2006) for class D fuels, with the exception of viscosity. In addition to these parameters, the distillate oil equivalent must also be analysed for total halogens (expressed as Chlorine), PCB content and certain specified metals. The test methods which should be used and the acceptable limits are as detailed in Table 1.

#### **C2 Standard for a residual oil equivalent**

The primary requirement for a PFO non-waste residual oil equivalent fuel is to meet the parameters set out in British Standard (BS2869:2006) for (as appropriate) Class E or F or G fuels, with the exception of viscosity and ash content. In addition to these parameters the residual oil equivalent must also be analysed for total halogens (expressed as Chlorine), PCB content and certain specified metals. The test methods which must be used and their appropriate limits are as detailed in Table 2.

**Table 1 Specification for a distillate oil equivalent**

Property	Units	Limit	IP Method	Notes
Kinematic viscosity	mm <sup>2</sup> /sec	To be agreed between supplier /user	See notes	BS2000-71 Section 1
Carbon residue (micro) [10% (v/v) distillation bottoms] (max).	% (m/m)	0.30	See notes	BS2000-398
Distillation:			See notes	BS2000-123
Recovery at 250 °C (max)	%( v/v)	65		
Recovery at 350 °C (min)	%( v/v)	85		
Ash (max)	% (m/m)	0.01	See notes	BS2000-4
Flash Point (min)	°C	56	523	
Water content (max)	mg/kg	200	See notes	BS2000-438
Sediment (max)	mg/l	24	415	
Sulfur (max)	% (m/m)	0.10	See notes	BS2000-336
Copper corrosion (3h at 100 °C) (max)		1	See notes	BS2000-154
Cold filter plugging point (max)		(°C)		BS2000-309
Summer (16 March to 30 September)		-4		
Winter (1 October to 15 March)		-12		
Strong Acid Number		zero		BS2000-139
Fatty acid methyl ester (FAME) content (max)	%( v/v)	5		BS EN 14078
Total halogens (as Chlorine) (max)	mg/kg	5	503	
PCB's (max)	mg/kg	5	462	
<b>Metals (max)</b>	<b>mg/kg</b>			
Mercury		5	594*	
Lead		5	IP PM ED*	
Nickel		5	IP PM ED*	
Chromium		5	IP PM ED*	
Copper		5	IP PM ED*	
Zinc		5	IP PM ED*	
Arsenic		5	IP PM ED*	
Cadmium		5	IP PM ED*	
Thallium		5	IP PM ED*	
Antimony		5	IP PM ED*	
Cobalt		5	IP PM ED*	
Manganese		5	IP PM ED*	
Vanadium		5	IP PM ED*	

\* Proposed test methods, the precision of which will be determined once there is a demand

**Table 2 Specification for a residual oil equivalent**

Property	Units	Limit	IP Method	Notes
Kinematic viscosity	mm <sup>2</sup> /sec	To be agreed between supplier/user	See notes	BS2000-71 Section 1
Carbon residue (micro) [ (max). Equivalent to BS2869:	%( m/m)		See notes	BS2000-398
Class E		15.0		
Class F		18.0		
Class G		20.0		
Sulfated Ash (max)	%( m/m)	0.20	550	
Flash Point (min)	°C	66.0	523	
Water content (max) Equivalent to BS2869:	%(v/v)		See notes	BS2000-74
Class E		0.5		
Class F		0.75		
Class G		1.0		
Sediment (max) Equivalent to BS2869:	%(m/m)			BS2000-375
Class E		0.10		
Class F		0.15		
Class G		0.15		
Sulfur (max)	%( m/m)	1.0	See notes	BS2000-336
Strong acid number		zero		BS2000-139
Total halogens (as Chlorine) (max)	mg/kg	150	503	
PCB's (max)	mg/kg	5	462	
<b>Metals (max)</b>	<b>mg/kg</b>			
Mercury		5	594	
Lead		25	592	
Nickel		5	592	
Chromium		5	592	
Copper		40	592	
Zinc		300	592	
Arsenic		5	592	
Cadmium		5	592	
Thallium		5	592	
Antimony		5	592	
Cobalt		5	592	
Manganese		5	592	
Vanadium		5	592	

## Appendix D: Guidance for the provision of Evidence of Conformance with the Quality Protocol

### The Oil Recycling Association/ Oil Care Campaign Licensed Quality Mark

This Quality Mark can only be used by those PFO producers who demonstrate full compliance with the Protocol and in addition meet certain minimum operating standards as detailed below:

- I. Production facilities must hold the appropriate Environmental Permit.
- II. Evidence of compliance with the permit during the 2 years prior to applying for the licence, must be supplied. This should be in the form of Environment Agency Compliance Assessment Reports (CAR). Public registers will be checked for all applicants.
- III. All Appropriate members of staff must be trained on applicable mandatory requirements such as the International Carriage of Dangerous Goods by Road Regulations (ADR) and Driver Certificate of Professional Competence (CPC). Evidence must be supplied on application for the licence.
- IV. The facility must hold the relevant Transport Operators Licence, proof of which must be supplied on application for the licence.
- V. If applicable the applicant must employ a Dangerous Goods Safety Adviser (DGSA), either as a member of staff or on contract and proof must be supplied on application for the licence.
- VI. The applicant must display Technical Competence in accordance with the Environmental Permitting Regulations 2007.
- VII. The applicant must demonstrate availability and use of the relevant accredited laboratory, sampling [IP475] and analytical techniques in order to ensure compliance with the standards required by the Protocol.
- VIII. All tank batches must be analysed to ensure compliance with the standards set in the protocol, prior to dispatch, and all samples retained for a period of four years.
- IX. The applicant must identify which virgin fuel the output PFO will substitute.
- X. In respect of REACH registration, applicants must demonstrate that they hold a formal registration or a valid exemption.

In addition, the following assurances must be given:

- I. The production facility must conform to certification re ISO9000.
- II. The production facility must conform to certification ISO14001.
- III. Laboratories used for analysis, may be in-house or external but must be UKAS accredited to BS17025 for all relevant methods required to be used by the Protocol.
- IV. That record keeping requirements consistent with the site's Environmental Permit and the above standards will be met upon granting of the licence.
- V. That all required samples will be stored for a minimum of 180 days, and that a secure store capable of storing samples for this period, will be available upon granting of the licence.

When applying for the licence, the evidence required above must be submitted along with the

check lists, and appropriate evidence, as contained in Annex 1 of the scheme.

On granting of the licence, an agreement will be issued, which will require an annual renewal. Successful licensees will be identified on the ORA web site. The annual renewal will only be granted on payment of a fee and successful completion of an external audit, in addition to those required by the relevant standards. The external audits carried out for the certification purposes to ISO9000, ISO14001 and BS17025 will provide the basis for the audit to be carried out for licence renewal.

**Ongoing Assessment of Compliance:**

Both internal and annual external audits will be conducted. In addition round robin sampling will be undertaken at a frequency to be decided.

Audit results will on request be made available to Regulators.

Failure of a licensee to comply with the licence conditions and to take any necessary corrective action will result in their removal from the published list of holders.

\* The Oil Care Campaign was set up by the Environment Agency in association with the Scottish Environment Protection Agency and Northern Ireland Environment Agency and industry associations to reduce oil pollution by providing guidance on and facilities for the safe disposal and management of oil.

It comprises a wide number of cross party interests from Government, Regulators, Local Authorities and a number of Oil Industry Trade Associations representing suppliers and users of petroleum products.

More information can be found on the ORA website <http://www.oilrecyclingassociation.co.uk>

## Appendix E: Routine Deliveries: Guidance concerning the provision of a Producers statement of Conformance with this Quality Protocol

This provides guidance concerning the information content that must be routinely made available to users of a PFO in order that they may be satisfied that the supplies they receive conform to the Quality Protocol. The design of the form is a matter for each supplier to decide on.

### Specimen example of a certificate of conformity for processed fuel oil (PFO) production and supply to a user

#### PART I

Company Name:
Address Line 1
Line 2
Line 3
Post Code:
Contact Detail:

Product Brand Name	PFO Product Type (PFO Class C1* or C2*) Comparable BS2869:2006 *Class ..... *(Insert as applicable)
Production Site Environmental Permit No:	
Production Batch Number:	Date of Production:

(Company [ insert] ) hereby certifies that the product supply detailed above was:

- Produced by a company licensed by the Oil Recycling Association and Oil Care Campaign’s conformance scheme (Licence Number .....)
- Produced at a site permitted to conduct such a recovery operation.
- Derived entirely from waste inputs listed in Appendix B of the current PFO Quality Protocol.
- Sampled and tested in accord with IP 475 /UKAS approved procedures against the relevant requirements of Appendix C Standards (\*Table 1 or Table 2) \*Delete as appropriate and met all requirements. See also Part II.
- Identified to appropriate users with associated permit conditions who have been advised of Regulatory requirements for its combustion **OR** for supplies made to distributors or brokers or outlets of any other form have been notified of the conditions of use.

And that the records of the make up and disposal of this batch are properly recorded.

Signed on behalf of (Company .....)

Authorised signatory ( .....)

Note: It is not intended this format is required to be replicated and each company may use its own design but the information contained within it is required.

**Specimen example of a certificate of conformity for processed fuel oil (PFO)  
production and supply to a user**

**PART II: Test reporting Class C1 Distillate Fuel Oil**

Note: Current Environment Agency Policy is that until further notice each supply is to be accompanied by a Test Report detailing the results of the associated Batch analysis. Suppliers may also be required as a condition of their supply terms to meet individual customer requirements.

**Company Name:**

**Address:**

**Post Code:**

**Contact Detail**

Product Brand Name	PFO Product Type (PFO Class C1) Comparable BS2869:2860 Class ...D.....
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**Delivery Detail**

Date	Advice Note	Weight kg	Volume litres
Delivery Note	Vehicle Reg. No.	Product Batch No.	Other

Property	Units	Method	Limit (max)	Result
Kinematic viscosity	mm <sup>2</sup> /sec	BS2000-71	To be agreed between supplier/user	
Carbon residue (micro) [10% (v/v) distillation bottoms] (max).	% (m/m)	BS2000-398	0.30	
Distillation:		BS2000-123		
Recovery at 250 °C (max)	% (v/v)		65	
Recovery at 350 °C (min)	% v/v		85	
Ash (max)	% (m/m)	BS2000-4	0.01	
Flash Point (min)	°C	IP523	56	
Water content (max)	mg/kg	BS2000-438	200	
Sediment (max)	mg/l	IP415	24	
Sulfur (max)	% (m/m)	BS2000-336	0.10	
Copper corrosion (3h at 100 °C) (max)		BS2000-154	1	
Cold filter plugging point (max) Summer (16 March to 30 September) Winter (1 October to 15 March)	(°C)	BS2000-309	-4 -12	
Strong Acid Number		BS2000-139	zero	
Fatty acid methyl ester (FAME) content (max)	% (v/v)	BS EN 14078	5	
Total halogens (as Chlorine) (max)	mg/kg	IP503	5	
PCB's (max)	mg/kg	IP462	5	

Property	Units	Method	Limit	Result
<b>Metals (max)</b>	<b>mg/kg</b>			
Mercury		IP 594*	5	
Lead		IP PM ED*	5	
Nickel		IP PM ED*	5	
Chromium		IP PM ED*	5	
Copper		IP PM ED*	5	
Zinc		IP PM ED*	5	
Arsenic		IP PM ED*	5	
Cadmium		IP PM ED*	5	
Thallium		IP PM ED*	5	
Antimony		IP PM ED*	5	
Cobalt		IP PM ED*	5	
Manganese		IP PM ED*	5	
Vanadium		IP PM ED*	5	

\* Proposed test methods, the precision of which will be determined once there is a demand

**Statement**

<p>[.....Company..... ] certifies that this data is representative of the supply made under the above delivery details and fully conforms to the Processed Fuel Oil Quality Protocol for a Class C1 Recovered Distillate Product that also meets other than its viscosity (where deviations are permitted) the requirements of a fuel to BS 2869:2860 Class D.</p> <p>Signed for [Company .....</p> <p>Authorised Signatory [ .....</p>
---

Note: It is not intended this format is required to be replicated and each company may use its own design but the information contained within it is required.

**Specimen example of a certificate of conformity for processed fuel oil (PFO)  
production and supply to a user**

**PART II: Test reporting Class C12 Residual Fuel Oil Type:**

Note: Current Environment Agency Policy is that until further notice each supply is to be accompanied by a Test Report detailing the results of the associated Batch analysis. Suppliers may also be required as a condition of their supply terms to meet individual customer requirements.

**Company Name:**

**Address:**

**Post Code:**

**Contact Detail**

Product Brand Name	PFO Product Type (PFO Class C2) Comparable BS2869:2006 Class* ...E,F,G..... *(Delete as applicable)
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**Delivery Detail**

Date	Advice Note	Weight kg	Volume litres
Delivery Note	Vehicle Reg. No.	Product Batch No.	Other

Property	Units	Method	Limit (max)	Result
Kinematic viscosity	mm <sup>2</sup> /sec	BS2000-71	To be agreed between supplier/user	
Carbon residue (micro) (max). Equivalent to BS2869: Class E Class F Class G	% (m/m)	BS2000-398)	15.0 18.0 20.0	
Sulfated Ash (max)	% (m/m)	IP550	0.20	
Flash Point (min)	°C	IP523	66	
Water content (max) Equivalent to BS2869 Class E Class F Class G	% (v/v)	BS2000-74	0.5 0.75 1.0	
Sediment (max) Equivalent to BS2869 Class E Class F Class G	% (m/m)	BS2000-375	0.10 0.15 0.15	
Sulfur (max)	% (m/m)	BS2000-336	1.0	
Strong Acid Number		BS2000-139	zero	
Total halogens (as Chlorine)	mg/kg	IP503	150	
PCB's (max)	mg/kg	IP462	5	
<b>Metals (max)</b>	<b>mg/kg</b>			
Mercury		IP594	5	

Property	Units	Method	Limit	Result
Lead		IP592	25	
Nickel		IP592	5	
Chromium		IP592	5	
Copper		IP592	40	
Zinc		IP592	300	
Arsenic		IP592	5	
Cadmium		IP592	5	
Thallium		IP592	5	
Antimony		IP592	5	
Cobalt		IP592	5	
Manganese		IP592	5	
Vanadium		IP592	5	

**Statement**

[.....Company..... ] certifies that this data is representative of the supply made under the above delivery details and fully conforms to the Processed Fuel Oil Quality Protocol for a Class C2 Recovered Residual Product that also meets other than its viscosity or ash content (where deviations are permitted) the requirements of a fuel to BS 2869:2006 \* Class E, G or G..

Signed for [Company .....

Authorised Signatory [ .....

Note: It is not intended this format is required to be replicated and each company may use its own design but the information contained within it is required.

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Feb 2011

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