

Advice Sheet 26: PAS100 at NRM

What is the PAS100?

Millions of tonnes of waste are landfilled every year in the UK. Considerable effort has been made to increase awareness in the value of waste as either an end product or as a means of producing energy. PAS100 is a publicly available specification for composted materials which has the purpose of specifying the minimum requirements of the process of composting to ensure the final product is fit for purpose.

Composts can be used as soil improvers, mulches, partial substrates in growing media and as a significant ingredient in manufactured topsoils and turf dressing. PAS100 has been sponsored by WRAP (Waste and Resources Action Programme www.wrap.org.uk) and developed by WRAP and AfOR (Organics Recycling Group www.organics-recycling.org.uk). It is now administered by REAL www.realschemes.org.uk under the Compost Certification Scheme (CCS) www.qualitycompost.org.uk.

PAS 100 testing

NRM has offered PAS100 testing since its inception in 2005 and is a CCS Approved Laboratory. Indeed, our laboratory contributed to the development of the latest edition - PAS100:2018. NRM has created set analysis suites which enable a quick and failsafe method to ensure that the minimum testing requirements are fulfilled.

Update:

Since the introduction of the original plant response and weeds test, WRAP has concluded that the tomato response test is not sufficiently sensitive to detect herbicide concentrations of interest to the growing media sector, although it is suitable for screening composts intended for use in agriculture or field horticulture.

A more sensitive test has been developed using field beans which is recommended as an additional test for those composts destined for use as a growing media as the latter could be used to cultivate both sensitive and insensitive plant species.

Sending us samples

As a CCS Approved Laboratory, NRM needs to ensure compliance with the T&Cs associated with the scheme. In order to do this, we endeavour to ensure our customers understand what is required to keep samples compliant.

This includes:

- Sample requirements
- Timescales
- Transit conditions and requirements
- Paperwork accompanying the samples
- Collation of data for REAL

To aid us in this, a customer acknowledgement form should be filled in so that we have decisions on file prior to any issues which will ensure samples should not be delayed in the event of any communication being required. Please contact enquiries@nrm.uk.com for details of this.

Sample requirements

To ensure that a representative sample is taken and that all analysis can be carried out, it is important that sufficient sample is sent. Please see Table 1 for information on the quantities required for different analysis.

Timescales

Timescales of Sample Dispatch by Producer

To minimise changes to the characteristics of the sample over time, it is important that samples are stored correctly and sent to the laboratory within certain timescales.

- The Digestate/Compost producer should endeavour to send samples to the laboratory on the same working day after the sample was taken.
- The Digestate/Compost producer should use a service that will deliver the sample to the laboratory within 24 hours if pathogen testing is required, otherwise a 48-hour service is sufficient. Exceptions include sites located at extreme geographical locations where a 48-hour service is the only viable option. In this instance samples **MUST** be dispatched on the same day as sampling.
- We are encouraging customers to only request courier collections on Monday, Tuesday and Wednesday to maximise the chance that these strict timescales are adhered to.

If the producer has not sent the samples within the correct timescales (as deduced by NRM from the producer's entry on the sample submission form) NRM should already have in writing the agreed course of action.

If the producer has chosen to cancel the testing, an administration fee will be applied to cover the cost of the courier, kit dispatch and administration.

Sample Transit timescales

If the sample is delayed in transit NRM should already have in writing the agreed course of action.

Please note: the process of transporting the sample from site to laboratory is a joint venture between both parties. NRM will not have any liability whatsoever in relation to third party courier services.

Transit conditions and requirements

- Samples must be delivered to the laboratory in a cool box with ice packs.
- The container used for transportation must be air-tight and protect the sample from contamination.
- Animal By-Product (ABP) derived Digestates & Composts must be transported using an AB117 registered courier. Therefore, when logging a collection request with us you will be asked if your sample falls within this category. This will enable us to select the appropriate courier service.

- Coolboxes for ABP samples should be labelled 'Cat 3 ABP samples for diagnostic purposes – not for human consumption'.

Coolboxes and labels are available from our Stores department.

Please call [01344 899030](tel:01344 899030), order via our website www.cawood.co.uk/nrm or request by email stores@nrm.uk.com

Paperwork accompanying the samples

Samples must be accompanied by the current version of the Compost Analysis Request Form which is correctly completed. This includes the certification code - REAL should be contacted for a certification code by applicants if this is not known.

Analysis request forms are available from the scheme website:

<https://www.qualitycompost.org.uk/certification/laboratories>. The form must not be modified in any way.

NRM will inform the producer if the correct request form has not been provided or is only partially completed but will not delay testing if no clarification is needed as to what testing is required.

However, the associated results **will not be reported** until the fully completed Analysis Request Form has been supplied.

Collation of data for REAL

NRM is obliged to supply all PAS100 test results for certification purposes to the CCS database maintained by REAL. This data is not supplied in an anonymous format.

Table 1 – NRM PAS 100 Analysis Suites

Suite Code	Description of Suite	Sample Required	Turnaround of Results
I109	PAS 100 PRINCIPAL GRADE FOR USE IN AGRICULTURE AND FIELD HORTICULTURE Includes E Coli & Salmonella, PTEs, Physical Contaminants and Stones, Stability, Plant Response & Weed Propagules, PSD, Dry Matter, Organic Matter, pH & Conductivity with Primary, Secondary & Total nutrients with Water Soluble Chloride, Nitrate & Ammonium-N.	8kg	Approx 30 days
I101	PAS100 SUITE FOR ADDITIONAL GRADE FOR USE IN AGRICULTURE AND FIELD HORTICULTURE Includes Particle Size Distribution & Contaminants, Stability, Potentially Toxic Elements, Bulk Density, pH, Organic Matter, Moisture, Total Nitrogen & Carbon with Water Soluble and Total Elements.	4kg	Up to 21 days
4822	FIELD BEAN GERMINATION AND GROWTH	1kg	Approx 30 days
I073	PAS 100 PRINCIPAL GRADE SOFT LANDSCAPE AND HORTICULTURE Includes Pathogens, PTEs, Physical Contaminants & Stones, Stability and Maturity, Particle Size Distribution, Dry Matter, Plant Response & Weed Propagules, pH, OM and EC.	8kg	Approx 30 days
I074	PAS 100 SUITE FOR ADDITIONAL GRADE FOR SOFT LANDSCAPING AND HORTICULTURE Includes Physical Contaminants & Stones, PSD, PTEs, Stability & Maturity, Bulk Density, Organic Matter and Dry Matter.	4kg	Up to 21 days

Minimum Compost Quality

Before compliance to PAS100 can be claimed, composts need to achieve the minimum quality/plant response requirements listed in the table below, appropriate to the grade. Because of the duration of the plant response test, notification will be given if weeds are detected at around 14 days. Generation of interim reports for the pass/fail criteria can be issued automatically as the result become available is possible. Please contact Customer Services on [01344 886338](tel:01344886338) or enquiries@nrm.uk.com if this is of interest.

Table 2 – Minimum compost quality for general use

Parameter	Upper Limit	Unit	Amount of Sample Required for Retest	Turnaround time
E Coli	1000	CFU/g fresh mass	200g	5 days
Salmonella spp	Absent	25g Fresh mass	200g	10 days
Cadmium (Cd)	1.5	mg/kg dry matter	3kg	5 days
Chromium (Cr)	100	mg/kg dry matter	3kg	5 days
Copper (Cu)	200	mg/kg dry matter	3kg	5 days
Lead (Pb)	200	mg/kg dry matter	3kg	5 days
Mercury (Hg)	1.0	mg/kg dry matter	3kg	5 days
Nickel (Ni)	50	mg/kg dry matter	3kg	5 days
Zinc (Zn)	400	mg/kg dry matter	3kg	5 days
Compost Stability	16	mg CO ₂ /g organic matter/day	2kg	10 days
Germinating Weed Seeds and Propagule Regrowth	0	mean number/litre of compost	5kg	Approx 30 days
Field Bean	No plants exhibiting symptoms greater than 2	See key in OFW004-006 Version 3	1kg	Approx 30 days
Total glass, metal, plastic, and any 'other' non-stone fragments > 2mm	0.25 of which 0.06 is plastic *	% mass/mass of "air-dry" sample	1kg	5 days
Stones > 4mm in grades other than "mulch"	8			5 days
Stones > 4mm in "mulch" grade	10			5 days

Please note: The minimum quantity for PTEs when requested separately incorporates the quantity required for bulk density and moisture which must be tested alongside the PTEs.

Table 3 – Minimum requirements for Tomato Plants

Parameter	Minimum Requirement	Unit	Amount of Sample Required for Retest	Turnaround time
Tomato plant germination	80	Germinated plants in peat-compost test mix trays as % of germinated plants in peat control trays	5kg	Approx 30 days
Tomato plant growth	80	Average plant mass in peat-compost test mix trays as % of average plant mass in peat control trays	5kg	Approx 30 days
Tomato plant abnormalities	No abnormalities	Plants grown in peat-compost test mix trays: description of any abnormalities	5kg	Approx 30 days

* Since 20th October 2025, all test reports now have plastic results reported against the reduced limit in the end of waste positions in effect in England (Compost Resource Framework), Scotland (WAS-G-DEF-06) and Wales (GN-022) which is 0.06% m/m in air-dry compost. This is equivalent to 50% of the plastics limit that is stipulated in BSI PAS 100.

The current BSI PAS 100 plastic limit now only applies in Northern Ireland or processes in England with an Environment Agency Regulatory Position Statement (RPS317) exemption (valid till August 2027), and processes in Wales operating under the Natural Resources Wales Regulatory Statement 122 (RS122) exemption (valid till December 2026). Please check the CCS website for all nation-specific end of waste positions here <https://www.qualitycompost.org.uk/documents/end-of-waste-positions>

Re-tests

Any samples and tested compost batches that do not conform to the minimum quality standard can be submitted for a re-test. The compost batch needs only to be tested in terms of the parameter(s) relevant for evaluating the efficacy of the corrective action. Retests of samples already held by the laboratory are not permitted and any results generated by such requests will not be acknowledged or recognised as part of the validation procedure. Before submitting a re-test, please refer to Table 2 to check minimum quantities required.

Sub-contract analysis

Samples that require the stability or plant response test get dispatched to Stockbridge Technology Centre in North Yorkshire. This 70ha site is also home to Sciantec (our sister laboratory). It was the combination of outstanding facilities, which include many hectares of quality irrigated land, certified organic land and 40 modern glasshouses, along with the plethora of experienced staff, that it made it such an obvious choice that STC was the premier option for these critical tests. This centre has been used by DEFRA and MAFF for over 50 years as a centre for horticultural research and technology.



Glasshouse at STC



Control Tomato Plants at First True Leaves

Test Reports

The test report is in the format as required but in addition as a separate file we provide a 'farmer friendly' version. In this version the results are clearly presented in amounts per fresh tonne, so the benefits of the compost are immediately obvious, and the results are in units familiar to the end user. A .csv can also be sent for those wishing to collate results on request.

Further Info

For further information on a range of topics relevant to PAS100 and the latest developments readers are directed to the REAL website.