

Annex A - Proactive Monitoring

1. Introduction

With effect from 1st January 2023, the LPPM Management Committee introduced a system of proactive monitoring of refiners on the LPPM Sponge Accreditation Lists in order to ensure the integrity and further enhance the reputation of the Lists and the refiners on it.

Sponge proactive monitoring will involve the refiner submitting a sample taken from their normal production process for testing by the LPPM's Good Delivery referees. It is believed that this method combines the desirable features mentioned above.

2. Notice to Refiners about Monitoring

The LPPM will send a letter to the refiner concerned by e-mail or facsimile informing it that proactive monitoring of its platinum and/or palladium and/or rhodium production is to take place within a period of one month.

The monitoring operation will normally begin with the taking of a sample from the refiner's normal production process (this operation being witnessed by a representative of an LPPM-approved supervising company). The method of sampling will be compatible with the refiner's normal method of production and will be agreed with the selected LPPM supervisor. Refiners that are on the platinum, palladium and rhodium Sponge Accreditation Lists will be required to undergo monitoring for all three metals at the same time (for instance, with the procedures described below being carried out on the same or successive days).

3. Sampling

3.1 Appointment of Supervisor

A refiner being monitored should, in the first place, appoint a supervising company from the LPPM-approved list (see Annex C) that will provide a representative ("supervisor") to witness the sampling operation on behalf of the LPPM. The LPPM-approved list of supervising companies comprises internationally recognised assaying and inspection companies. These companies have local representatives or laboratories around the world.

The costs and expenses of the supervisor must be paid by the refiner. The supervising company will charge a fixed fee (currently £1,000-00 plus VAT where applicable) for each sampling operation monitored, unless specifically agreed otherwise, plus travelling and subsistence expenses incurred by its representative. Thus, the expenses chargeable by the supervising companies will depend on the locations of their representative offices relative to that of the refiner.

3.2 Witnessing Production of the Sample

The production from which the sample is taken should have a fineness of 99.9% or above.

The sample should be taken from a normal production and the operations leading up to the actual production of the sample must be witnessed by the supervisor. The refiner should, prior to the supervision visit taking place, advise the selected supervisor of its normal method of taking samples for assaying to ensure that the supervisor is satisfied that such method is suitable for the purpose of proactive monitoring. If the sample is requested during holiday periods or other enforced shutdowns, the LPPM is willing to be flexible on the time allowed for arranging production of the sample.

The refiner should be confident about what the sample production contains and that it is homogeneous before taking the sample.

The purpose of taking the sample is to provide sufficient homogeneous material to provide the individual samples to be assayed by the refiner and the LPPM's referees, together with enough spare samples in case of various eventualities. The samples **must** be homogeneous: should any impurity differ by more than 50 ppm for rhodium, between any two samples produced as described below, the

refiner will generally be required to provide new samples, although before declaring the sample not to be homogeneous the LPPM may arrange for the third sample to be sent to a third referee.

To meet the standards for Sponge Accreditation, the GD refiners are asked to produce a homogeneous sponge of each metal to be accredited, and follow those steps:

- **Take 4 samples of 5g each from that sponge; 2 samples are to be sent to the LPPM, the 3rd one is to be kept as reserve sample by the refiner, and the 4th one is to be used for analysis by the refiner.**
- **Oxygen – Oxygen shall be determined in addition to core impurities, using the GD refiners' normal method (Gas analysis, Loss on Reduction); the maximum content permitted of oxygen shall be of 0.5 parts per thousand (but this value is not taken into consideration for the purity determination)**
- **Send the results obtained for the sponge (including purity, concentration of each impurity and oxygen content).**

The sample material produced as above should be divided in to 4 separate containers. Each individual sample must be a minimum of 5 grams.

The containers must be unmarked except for the net weight of the sponge contained as they will not be re-packed before sending to the referees.

The supervisor will report to the LPPM using a standardised format including information on:

- the use to which the refined metal will be put,
- the raw materials used,
- the processes leading up to the sample being produced,
- the method of sampling employed,
- the refiner will also, in the supervisor's presence, either produce, or permit the supervisor to produce, colour digital photographs of the sponge containers. The supervisor will forward these photographs to the LPPM for their records.
- the refiner will also be required to provide the supervisor with evidence, satisfactory to the supervisor, of when the refiner's scales and weights were last calibrated.

4. Treatment of the Samples

Two of the four individual samples will be sealed and sent by the supervisor to the **LPPM free of value**. One will be left with the refiner for assaying and one will be sealed by the supervisor and left with the refiner as reserves in case they are needed subsequently, for instance if any samples are lost in transit. Initially the individual samples should be sealed in clear polythene bags with no indication of the refiner's identity before being sealed in the supervisor's normal packing, this is to enable the LPPM in due course to forward the samples to the LPPM referees for cross-checking without opening them thereby reducing the possibility of contamination whilst at the same time maintaining the anonymity of the refiner producing the samples.

4.1 Refiner Assay

The sample left with the refiner by the supervisor should be assayed by the normal method used in the refinery for assaying rhodium sponges. The number of individual trials to be carried out is not specified by the LPPM but is instead left to the refiner, according to its normal practice. The method of assaying must be stated in the report, including the type of spectrographic testing used. Where a different method of assaying is used in respect of some impurities the alternative method should be

indicated on the assay report and the impurities in respect of which the alternative method has been used should be listed. on the copy of the refiner's detailed spectrographic analysis which should also be provided. When rhodium by spectrographic methods, oxygen and nitrogen should be ignored when deducting the sum of the impurities from 1000 (in other words, the oxygen and nitrogen should be treated as rhodium as appropriate).

Oxygen – Oxygen shall be determined in addition to core impurities, using the GD refiners' normal method (Gas analysis, Loss on Reduction); the maximum content permitted of oxygen shall be of 0.5 parts per thousand (but this value is not taken into consideration for the purity determination

With regard to the assaying the refiner should note the following:

- a) Particular attention should be paid to Annex E listing the "core" elements that the Referees are likely to look for. Annex E is purely for guidance, it is not a mandatory list of elements to be looked for by the refiner. But if a refiner does not look for these elements that may cause the referees to consider that the refiner's overall assay determination falls below an acceptable standard.
- b) The refiner should indicate on the assay report the Minimum Reporting Limit ("MRL") the refiner normally uses in respect of its day-to-day rhodium production. As guidance the referees feel that the maximum reporting limit in respect of each core elements should not exceed 10 ppm and that the aggregate of all such MRL's should not exceed 120 ppm. If a refiner's MRL's do not comply with the above the refiner may be asked to explain why other limits have been used and if the referees feel that the explanation is not satisfactory or that the overall assay has been adversely affected by having higher individual MRL's or a higher aggregate for such MRL's the assay result may, at the complete discretion of the LPPM, be regarded as a fail.
- c) All impurities should be reported in ppm without any decimal, whilst the matrix content (rhodium) should be reported in 0/00 to five significant figures without taking MRL items into consideration (for example, if element A is reported as "<5" those 5ppm should not be deducted from the matrix (Rh) purity. Any element not found should be reported as <MRL. It is not acceptable to merely indicate "not detected" or "not assayed". In all cases, a refiner is responsible for detecting any impurity in the sample, even if that element is not shown in the list of "core" elements per Annex E.

The LPPM will treat the information provided by the refiner in strictest confidence. None of this information will be transmitted to any of the referees other than on a "no names basis". The mean assay value and the detailed trial results will be assessed by the LPPM in consultation with the referees as may be necessary. The mean assay and (in borderline cases) the standard deviation of the trial results may be viewed by members of the LPPM Management Committee who will treat all such data as confidential.

4.2 Referee Assay

On receipt of the two sponge samples by the LPPM, one sample will be sent according to a rota to each of two of the LPPM's referees who will be asked to assay the sample to five significant figures. It should be noted that the referee will not be aware of the identity of the refiner that provided the sample. The referee will carry out at least three trial assays and, in the report, submitted to the LPPM will also provide details of the individual trial results and the methods of assaying used.

If the assay of the refiner and the average of the two referee's assays fail to agree within the tolerances described in Section 5 below (or in the opinion of the LPPM's independent analyst the referees' assay determinations of individual trace elements differ significantly from those of the refiner) the refiner will be asked to unseal one of the spare samples, carry out an assay on it and submit a new assay report to the LPPM within five local working days. At the same time, the refiner may be asked to send the remaining retained sample to the LPPM who will in turn send it another LPPM referee not involved with the initial samples.

4. Assessment Criteria and Further Testing

The LPPM, taking advice where necessary from its technical consultants, will compare the results provided by the refiner and the referees. In borderline cases, the LPPM will also take account of the individual trial results.

5. Consideration of Assay Results

5.1 Consideration of Assays from First Set Samples

The criteria used for assessing the assays on the samples provided are based on those contained in the Good Delivery Rules for new applicants. The refiner's and referee's assay results on the first sample provided by the refiner will be assessed as follows:

Full pass –will be regarded as having been achieved where the difference between the refiner's determination of each core element and the average of the referees' determination in respect of that element is less than 25 ppm and the difference between the refiner's aggregate determinations of such core elements and the average of the referee's determinations is less than 120 ppm. With a full pass no further testing will be required.

Borderline pass or Fail – if the above criteria for a full pass are not met the LPPM can either classify the results as a borderline pass if the differences can be satisfactorily explained and are considered not to be critical by the LPPM and the referees or a fail if the differences cannot be satisfactorily explained or are considered critical by the LPPM and the referees. If the LPPM feels that the results need further investigation the third reserve sample held by the LPPM may be sent to a third referee for testing.

5.2 Cases where a Second Sampling Operation is Required

Where the initial samples submitted by the refiner are deemed not to be homogeneous or the refiner is deemed to have failed the assaying test the refiner will be required to provide a further set of two samples in the presence of an LPPM supervisor in accordance with the procedure set out above in respect of the submission of the initial samples and send such samples to the LPPM.

6. Annual Proactive Monitoring and Testing Fee

Refiners (excluding Good Delivery refiners who are Full Members of the LPPM) who wish to remain on the LPPM Sponge Accreditation Lists (Pt, Pd and Rh) will be required in January of each year to pay an annual proactive monitoring and testing fee of £500.00 +VAT (as applicable) per metal. This fee may be reviewed and changed by the LPPM at any time and is in addition to the annual monitoring fee for Good Delivery plates and ingots.

7. Treatment of Refiners who are Unwilling to be Monitored.

Those refiners who decide not to submit to regular monitoring will be removed from the LPPM Sponge Accreditation Lists