

DIRECTIVE Implementation of Certification and Control Procedures Document 200 E (Issue 6th March, 2013)

The aim of the Prüfungsgemeinschaft Mauerbohrer e. V. (hereinafter “PGM”) is to ensure that manufacturers which are certified to use the PGM Inspection Mark produce and market drill bits for the preparation of anchor fixings which fulfil the requirements of the Deutsches Institut für Bautechnik (German Institute for Construction Engineering, hereinafter “DIBt”).

For that purpose, the quality potential of manufacturers and the drill bits produced by them are inspected and monitored regularly.

1. Award of the Right to Use the PGM Test Mark

1.1 Information

Companies desiring to obtain the right to use the PGM Test Mark of the “Prüfungsgemeinschaft Mauerbohrer e. V.” (PGM) shall file a relevant application, upon which they will receive the following information documents:

- Application for Certification (Document 600)
- Directive “Implementation of Certification and Control Procedures” (Document 200)
- DIBt-Dokument “Characteristic values, requirements and tests for drill bits with carbide cutting bodies used for the manufacture of drilled holes for anchoring”
- Articles covering the use of PGM Symbols (Document 101)
- PGM Code of Conduct (Document 102)
- PGM Code of Conduct Compliance Checklist (Document 103)
- Schedule of Fees and Charges (Document 500).

1.2 Formal Verification of submitted Applications

Once an application (Document 600 and Document 103) is received, the manager of PGM will check all details for completeness and whether the prerequisites for a certification procedure are met.

The application must also state the types and diameters of the drill bits for which the right to use the PGM mark is applied for. The diameters must be in line with the diameters listed in the DIBt Leaflet. Different types of drill bits are defined as hammer drill bits and rotary impact drill bits, which the Leaflet subdivides respectively into dual-cutting and multi-cutting drill bits.

Any missing data and information will be requested for further submission.

If the formal and additional prerequisites are not met, the applicant will be informed accordingly.

If the prerequisites are met in full, the applicant will be informed of the details of the auditor and testing institutes handling all further procedures (Documents 302 and 303).

1.3 Verification of Quality Potential and of the compliance with the social and environmental standards

The applicant is now free to select an auditor named by the PGM Head Office and to advise the PGM Head Office accordingly, upon which the nominated auditor will be commissioned.

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The costs involved with the audit shall be borne by the applicant; the services so rendered will be invoiced and settled by the PGM Head Office in accordance with the Schedule of Fees and Charges (Document 500).

The following questions must be clarified prior to any expert's services to be performed on the premises of the applicant:

- Are the applicant's production facilities capable of meeting the generally accepted standards of technology in order to comply with the characteristic specification data set forth in the DIBt Leaflet?
- Does the applicant comply with the PGM Code of Conduct (Doc. 102)?
- Is the quality assurance system of the applicant adequate for the intended purpose?
 - An adequate quality management system certified in accordance with ISO 9001 by a duly recognised certification body is acceptable. This is the case if the certification body has an official accreditation within the European System of Accreditation and Certification or a formally equivalent accreditation. Failing that, the Steering Committee of the PGM will decide whether the quality management system under review can be considered as adequate and acceptable.
 - If an applicant does not use a duly recognised quality management system, the auditor shall examine whether the quality assurance system is suitable to ensure, according to the state of the art, that the requirements for drill bits are met.

If a company produces in different facilities, each such facility shall be subjected to an audit.

The results of any audit shall be recorded by the auditor and distributed to the applicant and the PGM Head Office.

1.4 Initial Acceptance Test of Drill Bits

The applicant shall commission a testing institute named by the PGM Head Office to perform an initial acceptance test of the drill bits.

The costs involved in such a test shall be borne by the applicant.

For each drill type applied for, a number of drill diameters shall be checked based on the number of diameters applied for, as per the following table:

number of diameters applied for	number of diameters to be checked	remarks
1 to 3	1	
4 to 5	2	1 diameter each from the upper and lower range
6 to 9	3	1 diameter each from the upper, middle and lower range
>= 10	5	diameters distributed over the whole range

table 1: number of diameters to be checked based on number of diameters applied for

Six drills from each type and diameter to be checked shall be taken from the stock of the applicant by the auditor and sent to the testing institute.

For types with more than 2 cutting edges according to chapter 3.2 of the DIBt Leaflet, the applicant is required to submit the following items to the testing institute:

- a Table of Dimensions (Document 801) with the major dimensions of the applied-for drill type (the tolerance field of the cutting edge diameter (d_1) shall meet the requirements stated under point 3.2.1 of the DIBt Leaflet)
- three comparison drills with PGM Inspection Mark (S1 to S3) according to point 4.2.2 b) of the DIBt Leaflet (for the comparison tests). It is not necessary for these drills to have been manufactured by the applicant.

1.5 Dimensional checks

1.5.1 Drill bits with 2 cutting edges shall be checked in accordance with the DIBt Leaflet.

1.5.2 Drill bits with more than 2 cutting edges shall be checked regarding the diameters and the height of the main and the minor cutting edges and the angle between the cutting edges in accordance with the data sheet provided by the manufacturer.

In addition, the symmetry of the cutting plate in relation to the drill bit axis, the symmetry of the cutting plate tip and the run-out tolerance shall be checked to ensure that they do not exceed the maximum permissible deviations specified in the DIBt Leaflet.

1.6 Comparison Tests

The suitability of drill bits with more than 2 cutting edges to prepare boreholes for anchor joints shall be verified by way of comparison with drill bits with 2 cutting edges. This is also the necessary for drill bits with 2 cutting edges and a plate thickness of more than 0.4 of the nominal diameter.

It is essential to contact the PGM office prior to the tests to clarify the test programme. It is not possible to approve test results if tests have not been done according to the rules.

The comparison tests must be done by an independent institute which is approved by the PGM or under the control of an expert, named by the PGM. The costs of the tests shall be borne by the applicant.

The comparison tests are described in the DIBt Leaflet under point 4.2. In the diameter range of the application, only those diameters have to be tested for which deformation-controlled anchors with European Technical Approval are available. If the application covers only diameters, for which no suitable anchors are available, the tests shall be done with torque controlled anchors with European Technical Approval.

Per diameter, three drill bits with multiple cutting edges (MB1 to MB3) and three standard drill bits (V1 to V3) must be tested as follows:

- 10 holes are made with each drill bit. The diameter of each hole must be measured by calibration pins. Drilling hole nos. 1, 5 and 9 of each drill bit must be located taking into consideration the minimum hole and edge distances which are required for the anchor used. The distances between the other holes can be smaller.
- Pull out tests must be done in hole nos. 1, 5 and 9 of each drill bit (3 drill bits with multiple cutting edges and 3 standard drill bits).

The test is passed if the mean value of the ultimate load of anchors set into holes made with drill bits with more than two cutting edges is not more than 10% below the mean value of ultimate load of anchors set into holes made with dual cutting edge drill bits and if the variance coefficient of the pull-out forces does not exceed 20%.

If this conditions are not fulfilled for one or more diameters, the tests can be repeated for these diameters (3 holes each with 3 multicutters and 3 standard drill bits) with drill bits

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identically in construction as those used for the first tests. The evaluation (mean values and variance coefficient) is done in this case under inclusion of all test results.

Alternatively, the certification can be restricted after clearance with the PGM Steering Committee to certain diameters under the condition that the diameters which passed the test are representative for the certified diameter range.

The certification of drill bit diameters, for which no deformation controlled anchors with European Technical Approval are available, is preliminary. As soon as such anchors become available, the relevant tests have to be done.

1.7 Verification of Test Results

The test institute sends one report (doc. 800) per type to the applicant and the PGM office.

A compilation of the records covering

- the formal verification of the submitted documents,
- the quality potential test (in summarised form), and
- the drill bit test,

are submitted by the PGM Head Office to the Steering Committee.

The Steering Committee of the PGM decides on the basis of the following alternatives:

- rejection of application for reason of serious deficiencies
- request for further tests, e.g. if one or more drill bits do not meet the relevant characteristic design values - in which case a decision will be postponed until the re-test results are presented
- recommendation to grant the right to use the PGM Test Mark

If several types are involved in the procedure, the decisions and the certification will be completed separately.

The decision to reject an application for serious deficiencies or request further tests will be communicated by the PGM Head Office to the applicant without delay.

If the PGM Steering Committee recommends the certification and grant of the PGM Test Mark, the PGM Head Office will advise the board and the PGM Steering Committee accordingly.

The certification and grant of the right to use the PGM Test Mark are exclusively subject to the approval of the Board and the PGM Steering Committee.

Interim decisions may be made by the manager of the PGM together with the Chairman of the PGM Steering Committee or their deputies.

Such interim decisions shall be submitted to the PGM Board of Management and the PGM Steering Committee for approval.

Once a positive decision has been made, the PGM Head Office will invoice the applicant with the costs involved with the certification procedure and will also invite the applicant to enter into a "Control Procedure Agreement" with one of the testing institutes named by the PGM (Document 204).

1.8 Certification and Grant of the PGM Test Mark

After conclusion of a "Control Procedure Agreement" with a duly recognised testing institute and payment of the certification invoice, the manager of the PGM will allocate the

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Manufacturer Serial Numbers and effect the documentation of the successfully passed certification procedure and the award of the PGM Test Mark.

For certified drill bits with more than 2 cutting edges, before each change of the tolerances regarding the diameters or the height of the main and the minor cutting edges or the angle between the cutting edges, the Steering Committee has to be informed. The Steering Committee will decide, if the certification is still valid or if comparison tests according to 1.6 have to be repeated.

A separate certificate will be issued for each type.

The applicant will receive

- a written confirmation of certification, signed by the manager of the PGM
- a legal document confirming the right to use the PGM Test Mark of the "Prüfgemeinschaft Mauerbohrer e.V."

Each document is signed by the PGM President or his deputy, the Chairman of the PGM Steering Committee or his deputy and the manager of the PGM.

The manufacturer will be added to the register of companies entitled to use the PGM Test Mark.

The German Institute for Construction Engineering (DIBt) will be advised of the certification and the assigned manufacturer identification codes.

2. Control Procedures

The costs involved with the control procedures shall be borne by the applicant.

2.1 Testing of Drill Bits

2.1.1 When entering into a "Control Procedure Agreement", the applicant shall inform the testing institute of at least one, but preferably several, locations where drill bits can be sampled for subsequent testing. These locations should be stockrooms and/or dealers carrying an adequate range so as to enable the testing institute to have free choice.

The applicant shall be responsible for ensuring that these sampling locations are as near as possible to the testing institute because the costs involved with sampling count towards the total testing costs.

Manufacturers are, of course, free to name new sampling locations whilst the certification procedure is in progress.

A trustee may, in exceptional cases, e.g. if the distance between the testing institute and the sampling location is too far and the costs thus involved unduly high, be used to do the sampling.

The applicant shall assist the PGM Head Office by way of making suggestions to find a suitable trustee.

The testing institute or the trustee samples once annually from one of the named sampling locations 4 drills per type with the diameters to be checked according to table 1.

The above drill bit samples shall be subjected to a dimensional test in accordance with

- DIBt Leaflet and/or
- the applicable manufacturer's Table of Dimensions (Document 801).

The testing institute will submit a Test Report (Document 800) to the PGM Head Office.

2.1.2 This test report will be reviewed by the PGM manager.

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2.2 Control of Quality Potential

2.2.1 If a manufacturer maintains a duly recognised quality management system certified in accordance with ISO 9001 (see Item 1.3), the quality potential shall be regarded as proven. This being the case, the manufacturer shall keep the PGM Head Office updated on the continued certification status; a copy of the relevant - and then applicable - certificate is considered as adequate proof.

The manufacturer agrees to submit additional quality control records and documents to the PGM Management upon request by the Steering Committee. The Steering Committee can arrange audits even if a company has a certified quality system.

2.2.2 If the manufacturer does not maintain a duly recognised quality management system certified in accordance with ISO 9001, audits will have to be held at company level in order to establish the continuity of the required quality standard, which audits will normally be held once annually.

The associated costs borne by the manufacturer are shown in the PGM Schedule of Fees and Charges (Document 500)

2.3 Test Results

If the test report on a drill bit sample shows deviations from the requirements of the DIBt Leaflet or, for drills with more than 2 cutting edges, from the relevant Table of Dimensions (Document 801) submitted to the PGM, the PGM Management will react, depending on the deviation under review, as follows:

- if the test report shows deviations from the cutting edge diameter (d1), the test report will be immediately referred - in neutral form - to the PGM Steering Committee for further processing;
- in case of deviations in the symmetry of the cutting plate tips in relation to the drill axis (b), the height of the cutting plates (a), the symmetry of the cutting plate tip (c) or concentricity (R1), the management may - depending on the severity of the deficiency - order a re-test to be performed.

In case of any deviation the manufacturer will be informed immediately.

Manufacturers will not be individually advised of the results of successful quality control tests. Such information will only be issued in summary form at the ordinary general meeting.

2.4 Involvement of the PGM Steering Committee

If this Committee has to be called upon for reason of tests as per Item 1.4 or deficiencies in respect of the quality potential, the results of the relevant quality control tests will be referred - in neutral form - to the PGM Steering Committee without delay, upon which the Committee may

- declare the deviations to be insignificant,
- order new, or even more stringent if not completely revised, verification tests as outlined in Item 1,
- or, in case of a recurrence, recommend the PGM Steering Committee to revoke the right to use the PGM Test Mark.

3. Responsibilities of Manufacturers entitled to use the PGM Test Mark

PGM Test Mark qualified manufacturers shall be obliged to assist and support the PGM in the performance of its quality control activities.

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These manufacturers shall refrain from any and all acts likely to interfere with the proper and unhindered performance of audit and test procedures.

4. Handling of Objections, Complaints and Disputes

4.1 Objections to and/or complaints about the activities of the PGM shall be filed by an applicant or PGM Test Mark qualified manufacturer with the PGM Head Office within a period of four (4) weeks from the date of the source of objection or complaint.

4.2 Said objections and/or complaints will be dealt with and decided by the appropriate PGM committees.

If the decision about a case is clearly based upon working records passed by the PGM Board and/or the Steering Committee, or upon an existing decision passed by a PGM Committee competent to deal with such case under review, all further action will be taken by the manager of the PGM on his own.

4.3 The decision so made will be notified to the objecting and/or complaining party as soon as possible.

4.4 Objections against such a decision may be raised in writing within thirty (30) calendar days as from the date the decision was received.

4.5 The PGM Arbitration Committee, as specified by Section 11 of the Statutes, is the last stage of appeal to deal with objections and/or complaints.