



CMM PROC 20:2013

Approval of cement

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1 Scope

1.1 This document sets out the procedures that shall be used by CMM for the approval of cement pursuant to VC9085:2007.

NOTE 1 In accordance with the requirements of paragraphs 3.4 and 3.5 of VC9085:2007, the manufacturer or importer who is established within the Republic of South Africa shall apply to the regulatory authority for the approval of each type of cement and each factory where such a type of cement is manufactured.

NOTE 2 Type-examination and approval are done per cement type per factory.

1.2 This document applies to the following:

- a) All personnel of CMM involved in the approval of cement.
- b) All cement types as covered by the scope of VC9085:2007.

1.3 This document covers the following:

- a) General rules for the approval of cement;
- b) Application for the approval of cement;
- c) Type-examination of cement;
- d) Refusal of approval of cement;
- e) Approval granted for cement;
- f) Extension of approval for cement;
- g) Withdrawal of approval for cement.

2 Normative references

This document incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text. For dated references, subsequent amendments to or revisions of any of these publications apply to this document only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

Compulsory Specification for cement (herein referred to as VC9085:2007) as published by Government Notice No. R. 544 (Government Gazette No. 30023) of 6 July 2007.

Divisional Manual No. CMM M003: *'Quality Management System'*

ISO/IEC Guide 65: *'General requirements for bodies operating product certification systems'*

National Regulator for Compulsory Specifications Act, 2008 (Act No. 5 of 2008)

Regulation 2 relating to the payment of fees in the form of levies as published by Government Notice No. R. 924 (Government Gazette No. 33615) of 15 October 2010.

SABS EN 197-2: *'Cement, Part 2: Conformity evaluation'*

SANS 289: *'Labelling requirements for prepackaged products (prepackages) and general requirements for the sale of goods subject to legal metrology control'*

SANS 17025: *'General requirements for the competence of testing and calibration laboratories'*

SANS 50197-1: *'Cement, Part 1: Composition, specifications and conformity criteria for common cements'*

SANS 50413-1: *'Masonry cement, Part 1: Composition, specifications and conformity criteria'*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in VC9085:2007 and the following apply.

technical file

A collection of documents as set out in NRCS form No. CMM FM 9085-2 or a collection of parts thereof.

type of cement

A category of cement that does not differ in such essential respects as:

- a) the facility used by the manufacturer for the production of the cement type, or;
- b) composition, strength class and physical and chemical properties.

4 Symbols and abbreviated terms

CMM

NRCS Chemicals, Mechanical and Materials Division

Fe(II)

ferrous oxide with the chemical formula FeO

Fe(III)

ferric oxide with the chemical formula Fe₂O₃

5 General requirements

5.1 Inspection records

- 5.1.1 An AA33 form shall be completed and issued to the applicant or his representative:
- on receipt of application documents or technical files;
 - when technical files and approval certificates are collected from CMM.

A copy of the AA33 form shall be kept in the relevant client file or type-examination file.

- 5.1.2 All records pertaining to the approval of a cement type shall be kept in the applicable type-examination file. Records shall be kept for all documentation generated and received during the execution of the procedures as set out in this document. The records to be kept are identified in this document.
- 5.1.3 Client files shall be kept in room C314A in accordance with the requirements of paragraph 12.3.2 of Divisional Manual No. CMM M003.
- 5.1.4 Product files for approved types of cement shall be kept in room C314A and shall be filed in numeric order as per allocated approval numbers. The Manager: Approvals shall be responsible for the maintenance of such product files.

5.2 Data

- 5.2.1 *Technical File Database / Technical File Database – Construction materials* is stored on the NRCS computer network and shall be maintained by the Manager: Approvals.
- 5.2.2 *Homologation Database / LOA Database – Construction materials* is stored on the NRCS computer network and shall be maintained by the Manager: Approvals.

5.3 Interpretation of VC9085:2007

In accordance with the requirements of paragraphs 3.4 and 3.5 of VC9085:2007, the manufacturer or importer who is established within the Republic of South Africa shall apply to the regulatory authority for the approval of each type of cement and each factory where such a type of cement is manufactured. Therefore, type-examination and approval shall be done per cement type per factory.

5.4 Proof of compliance

5.4.1 Criteria

A type of cement shall be examined for compliance with the latest edition of an appropriate South African National Standard as set out in VC9085:2007.

5.4.2 Evidence

- 5.4.2.1 Only certificates of conformity from a certification body that was accredited by a signatory to the International Accreditation Forum's Mutual Recognition Agreement in accordance with ISO/IEC Guide 65 shall be accepted as proof of compliance with the appropriate South African National Standards as set out in VC9085:2007.
- 5.4.2.2 Certificates of conformity shall satisfy the requirements of paragraph 8.2 of SABS EN 197-2.

6 Application for approval

6.1 A manufacturer or importer who is established within the Republic of South Africa may request for the approval of a cement type verbally, telephonically, electronically or in writing.

6.2 On receipt of a request in paragraph 6.1, the inspector shall determine if the product is covered by the scope of VC9085:2007 (see Annexure C).

6.3 Product not covered by VC9085:2007

When it be found that the product is not covered by the scope of VC9085:2007, the inspector shall inform the applicant accordingly (electronically or in writing). The inspector shall file the following in the relevant client file:

- a) A copy of the abovementioned communication to the applicant;
- b) Documented evidence (e.g. technical specifications, bag markings or marketing material) that indicates that the product is not covered by the scope of VC9085:2007.

6.4 Product covered by VC9085:2007

When it is found that the cement type is covered by the scope of VC9085:2007, the inspector or Administration Officer: Approvals shall issue the following forms to the applicant:

- a) NRCS form No. CMM FM 9085-1;
- b) NRCS form No. CMM FM 9085-2;
- c) NRCS form No. CMM FM 9085-3;
- d) NRCS form No. CMM FM 9085-4.

6.5 The applicant will submit the items as communicated to him by means of NRCS form No. CMM FM 9085-1 to CMM.

6.6 Registration of application

On receipt of the application, the Administration Officer: Approvals shall take the following actions:

6.6.1 The application shall be registered in the *Technical File Database – Construction materials*.

6.6.2 A type-examination file shall be opened. The type-examination file and all relevant documentation in the technical file shall be marked with the allocated technical file number.

6.7 Financial check

6.7.1 The Administration Officer: Approvals shall ensure with the Finance Division of the NRCS that the applicant has been registered as a levy payer in terms of regulation 2 relating to the payment of fees in the form of levies as published by Government Notice No. R. 924 (Government Gazette No. 33615) of 15 October 2010.

6.7.2 The Administration Officer: Approvals shall check for the following:

- a) If the applicant has included proof of payment of the non-refundable application fee for the approval of the cement type;
- b) If the applicant's levy return forms and payments are up to date (check with the Finance Division of the NRCS);
- c) If the applicant owes any other outstanding fees to CMM (check with the Finance Division of the NRCS).

- 6.8** When it is determined that the applicant has not met his financial obligations towards the NRCS as set out in paragraph 6.7.2, the Administration Officer: Approvals shall take the following actions:
- 6.8.1 Application without proof of payment**
- The Administration Officer: Approvals shall request the Finance Division to invoice the applicant for the due application fee for approval. A copy of the invoice shall be filed in the type-examination file.
- 6.8.2** The applicant shall be informed electronically or in writing of the following:
- a) The application for the approval of the type of cement will not be considered, because of the outstanding proof of payment of the non-refundable application fee or other outstanding fees;
 - b) The application will be rejected if no proof of payment of the outstanding fee/s has been received within three (3) weeks from the date of notification.
- 6.8.3** The Administration Officer: Approvals shall file a copy of the notification in the relevant type-examination file.
- 6.8.4** The actions as set out in paragraph 8 may be taken when no proof of payment of the outstanding fee/s has been received within the three (3) week notification period.
- 6.9** When it is found that the applicant has met his financial obligations towards the NRCS, the Administration Officer: Approvals shall take the following actions:
- 6.9.1** The Administration Officer: Approvals shall request the Finance Division to invoice the applicant for the received proof of payment of the non-refundable application fee. The Administration Officer: Approvals shall file a copy of the invoice indicating full payment of the application fee in the relevant type-examination file.
- 6.9.2** The Administration Officer: Approvals shall forward the type-examination file to the inspector who has been nominated by the Manager: Approvals to examine the application.

7 Type-examination of cement

7.1 Examination of technical file

- 7.1.1 The application shall be examined to establish whether the applicant has submitted the items as communicated to him by means of NRCS form No. CMM FM 9085-1.
- 7.1.2 The technical file and its contents shall be examined for completeness and correctness in accordance with the requirements of NRCS form No. CMM FM 9085-2. (see paragraphs 5.3 and 5.4).
- 7.1.3 The technical file and its contents shall be examined to establish its suitability with respect to demonstrating compliance with VC9085:2007.
- 7.1.4 The results of the examination shall be recorded in a *NRCS Inspection Report* for cement (see attached example).

7.2 Unacceptable technical file

The inspector shall take the following actions when the technical file and its contents do not meet the criteria as set out in paragraph 7.1:

- 7.2.1 The inspector shall notify the applicant electronically or in writing of the following:
- The applicant shall be notified of the non-conformances of the technical file and requested to resubmit a corrected file within four (4) months from the date of notification;
 - The technical file must be collected at the NRCS premises for correction purposes (see paragraph 5.1.1).
- 7.2.2 The inspector shall file copies of the notification and technical file in the type-examination file.
- 7.3 The actions as set out in paragraph 8 may be taken when the applicant fail to resubmit the corrected technical file within the four (4) month period.
- 7.4 The following actions shall be taken when it is found that the resubmitted technical file still did not meet the criteria as set out in paragraph 7.1:
- 7.4.1 One copy of the technical file shall be made and kept in the type-examination file.
- 7.4.2 The inspector shall invite the applicant to a meeting at the NRCS premises. The purpose of the meeting will be the following:
- Explanation of the non-conformances on the technical file;
 - The applicant shall be supplied with a copy of the non-conformances;
 - The inspector shall return the technical file to the applicant during the meeting for correction purposes (see paragraph 5.1.1);
 - The applicant shall be requested to resubmit a corrected technical file within three (3) weeks from the date of the meeting.
- 7.4.3 The actions as set out in paragraph 8 may be taken when:
- the applicant fails to resubmit the corrected technical file within the three (3) week period after the meeting date, or;
 - when it is found that the resubmitted technical file still did not meet the criteria as set out in paragraph 7.1.

7.5 Acceptable technical file

The actions as set out in paragraph 9 shall be taken when the technical file meets the criteria as set out in paragraph 7.1.

8 Refusal of approval

- 8.1** The inspector shall complete and sign the inspection report and include it in the type-examination file.
- 8.2** The inspector shall prepare a letter as set out in Annexure B and include it in the type-examination file.
- 8.3** The inspector shall forward the type-examination file to the Manager: Approvals for review.
- 8.4** Once satisfied with the contents of the inspection report and letter, the Manager: Approvals shall sign the aforementioned documents.
- 8.5** The inspector shall file copies of the following documents in the type-examination file:
- a) The signed letter in paragraph 8.4;
 - b) *NRCS Inspection Report*;
 - c) Technical file (when available).
- 8.6** The inspector shall ensure that the signed letter in paragraph 8.4 is forwarded to the applicant electronically or by mail.
- 8.7** The inspector shall file the type-examination file in the relevant client file (see paragraph 5.1.3).

9 APPROVAL GRANTED

9.1 The inspector shall complete and sign the inspection report. The inspection report shall be filed in the type-examination file.

9.2 The inspector shall register the cement type in the *LOA Database – Construction materials* (see paragraph 5.2.2) and shall allocate an approval number. The first three digit groupings of the approval number shall indicate “AZ/9085/2007”. The last digit grouping of the approval number shall be a sequential number. An example of the arrangement of the approval number for cement is set out in Annexure A.

9.3 Approval certificate

9.3.1 The inspector shall compile a *NRCS Letter of Authority APPROVAL GRANTED certificate* as attached to this document.

9.3.2 The inspector shall mark the following documents with the allocated type approval number, his signature and date:

- a) Technical description of the type of cement (the document as described under paragraph 2 of NRCS form No. CMM FM 9085-2 may be used for this purpose);
- b) Details of the marking of the packaging for the type of cement, or in the case of bulk supply, the information as contained in the commercial documents (the document as described under paragraph 3 of NRCS form No. CMM FM 9085-2 may be used for this purpose);
- c) Details of the factory for the production of the type of cement (the document as described under paragraph 4 of NRCS form No. CMM FM 9085-2 may be used for this purpose);
- d) Details of the certification body that will undertake the tasks as set out in paragraph 5 of SABS EN 197-2 for the type of cement (the document as described under paragraph 4 of NRCS form No. CMM FM 9085-2 may be used for this purpose);
- e) For imported cement, details of the dispatching centre for the type of cement (NRCS form No. CMM FM 9085-4 may be used for this purpose);
- f) For imported cement, details of the laboratory that will undertake confirmation autocontrol testing in accordance with the requirements of paragraph 9.2.2 of SABS EN 197-2 for the type of cement (NRCS form No. CMM FM 9085-4 may be used for this purpose);
- g) For imported cement, details of the third party conformity assessment body that will undertake the tasks as set out in paragraphs 9.3.1 and 9.3.2 of SABS EN 197-2 for the type of cement (NRCS form No. CMM FM 9085-4 may be used for this purpose).

The documents shall be described in the *NRCS Letter of Authority APPROVAL GRANTED certificate*.

9.3.3 The inspector shall emboss the golden star on the certificate with the NRCS emblem embossment machine.

9.3.4 The inspector shall sign the prepared *NRCS Letter of Authority APPROVAL GRANTED certificate* and include it in the type-examination file.

9.4 The inspector shall forward the type-examination file to the Manager: Approvals for review.

9.5 Once satisfied with the contents of the inspection report and *NRCS Letter of Authority APPROVAL GRANTED certificate*, the Manager: Approvals shall sign the aforementioned documents.

9.6 The inspector shall compile the following:

<p>ORIGINAL <i>NRCS Letter of Authority APPROVAL GRANTED certificate</i></p> <p style="text-align: center;">↓</p> <p>Attach to ORIGINAL certificate: COPIES of marked documents in paragraph 9.3.2.</p> <p style="text-align: center;">↓</p> <p>Submit to applicant.</p>	<p>COPY of <i>NRCS Letter of Authority APPROVAL GRANTED certificate</i></p> <p style="text-align: center;">↓</p> <p>Attach to COPY of certificate: ORIGINAL marked documents in paragraph 9.3.2.</p> <p style="text-align: center;">↓</p> <p>File in type-examination file.</p>
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- 9.7** The inspector shall notify the applicant in writing or by e-mail that the approved *NRCS Letter of Authority APPROVAL GRANTED certificate* must be collected at the NRCS premises (see paragraph 5.1.1).
- 9.8** The inspector shall file a copy of the notification in the type-examination file.
- 9.9** The inspector shall open a product file for the approved cement type and mark it with the allocated type approval number.
- 9.10** The inspector shall file the type-examination file in the product file for the approved cement type.
- 9.11** The inspector shall store the product file in room C314A (see paragraph 5.1.4).

10 Extension of approval

10.1 Notification

10.1.1 In accordance with the terms and conditions of issue of a *NRCS Letter of Authority APPROVAL GRANTED certificate*, the holder of an approval shall notify the NRCS of every modification to the type of cement itself, its conformity evaluation processes and information that shall appear on each bag of cement prior to implementation.

10.1.2 The inspector shall establish the nature of the modifications and/or additions that will be made to the approved type of cement, and request electronically or in writing the following from the holder of the approval:

- a) NRCS form No. CMM FM 9085-5;
- b) Proof of payment of the current non-refundable application fee for the extension of approval of a type of cement as published in the Government Gazette in terms of section 14(3)(b) of Act No. 5 of 2008;
- c) Documented evidence as per NRCS form No. CMM FM 9085-2 indicating such modifications and/or additions.

10.2 Registration of application

On receipt of the items as per paragraph 10.1.2, the Administration Officer: Approvals shall take the following actions:

10.2.1 The application shall be registered in the *Technical File Database – Construction materials*.

10.2.2 A type-examination file shall be opened. The type-examination file and all relevant documentation in the technical file shall be marked with the technical file number.

10.3 Financial check

The Administration Officer: Approvals shall check for the following:

- a) If the holder of the approval has included proof of payment of the non-refundable application fee for the extension of approval of the type of cement;
- b) If the levy return forms and payments of the holder of the approval are up to date (check with the Finance Division of the NRCS);
- c) If the holder of the approval owes any other outstanding fees to the NRCS (check with the Finance Division of the NRCS).

10.4 When it is found that the holder of the approval has not met his financial obligations towards the NRCS as set out in paragraph 10.3, the Administration Officer: Approvals shall take the following actions:

10.4.1 Application without proof of payment

The Administration Officer: Approvals shall request the Finance Division to invoice the holder of the approval for the due application fee. A copy of the invoice shall be filed in the type-examination file.

10.4.2 The holder of the approval shall be informed electronically or in writing of the following:

- a) The application for the extension of approval of the type of cement will not be considered, because of the outstanding proof of payment of the non-refundable application fee or other outstanding fees;
- b) The application will be rejected if no proof of payment of the outstanding fee/s has been received within three (3) weeks from the date of notification.

10.4.3 The Administration Officer: Approvals shall file a copy of the notification in the relevant type-examination file.

10.4.4 The actions as set out in paragraph 8 may be taken when no proof of payment of the outstanding fee/s has been received within the three (3) week notification period.

10.5 When it is found that the holder of the approval has met his financial obligations towards the NRCS, the Administration Officer: Approvals shall take the following actions:

10.5.1 The Administration Officer: Approvals shall request the Finance Division to invoice the holder of the approval for the received proof of payment of the application fee. The Administration Officer: Approvals shall file a copy of the invoice indicating full payment of the application fee in the relevant type-examination file.

10.5.2 The Administration Officer: Approvals shall forward the type-examination file to the inspector who has been nominated by the Manager: Approvals to examine the application.

10.6 Examination of technical file

10.6.1 The inspector shall examine the technical file and its contents to establish its suitability with respect to demonstrating the following:

- a) Modifications and/or additions made to the type of cement itself, its conformity evaluation processes and information that shall appear on each bag of cement;
- b) Compliance with VC9085:2007 as a result of the modifications and/or additions made.

10.6.2 The results of the examination shall be recorded in a *NRCS Inspection Report* for cement (see attached example).

10.7 Unacceptable technical file

The inspector shall take the following actions when the technical file and its contents did not meet the criteria as set out in paragraph 10.6.1:

10.7.1 The inspector shall notify the holder of the approval electronically or in writing of the following:

- a) The holder of the approval shall be notified of the non-conformances of the technical file and requested to resubmit a corrected file within four (4) months from the date of notification;
- b) The technical file must be collected at the NRCS premises for correction purposes.

10.7.2 The inspector shall file copies of the notification and technical file in the type-examination file.

10.7.3 The actions as set out in paragraph 8 may be taken should the holder of the approval fail to resubmit the corrected technical file within the four (4) month period.

10.7.4 The following actions shall be taken when it is found that the resubmitted technical file still did not meet the criteria as set out in paragraph 10.6.1:

10.7.4.1 One copy of the technical file shall be made and kept in the type-examination file.

10.7.4.2 The inspector shall invite the holder of the approval to a meeting at the NRCS premises. The purpose of the meeting will be the following:

- a) Explanation of the identified non-conformances of the technical file;
- b) The holder of the approval shall be supplied with a copy of the identified non-conformances;
- c) The inspector shall return the technical file to the holder of the approval during the meeting for correction purposes;

- d) The holder of the approval shall be requested to resubmit a corrected technical file within three (3) weeks from the date of the meeting.

10.7.4.3 The actions as set out in paragraph 8 may be taken when:

- a) the applicant fails to resubmit the corrected technical file within the three (3) week period after the meeting date, or;
b) when it is found that the resubmitted technical file still did not meet the criteria as set out in paragraph 10.6.1.

10.8 Acceptable technical file

The actions as set out in paragraph 10.9 shall be taken when the technical file meets the criteria as set out in paragraph 10.6.1.

10.9 APPROVAL EXTENDED

10.9.1 The inspector shall complete and sign the inspection report. The inspection report shall be filed in the type-examination file.

10.9.2 The inspector shall register the extension of approval of the type of cement in the *LOA Database – Construction materials* (see paragraph 5.2.2) and shall assign a sequential “Extension No.”. The Extension Number shall be in Roman numerals, e.g. I, II, III, IV, V, VII, etc.

10.10 Extension of approval certificate

10.10.1 The inspector shall compile a *NRCS Letter of Authority APPROVAL EXTENDED certificate* for cement as attached to this document.

10.10.2 The inspector shall mark the following documents with the appropriate type approval number, his signature and date:

- a) When relevant, a technical description of the type of cement as described under paragraph 2 of NRCS form No. CMM FM 9085-2, demonstrating the modifications and/or additions to the type of cement itself;
b) When relevant, details of the modifications and/or additions to the marking of the packaging for the type of cement (the document as described under paragraph 3 of NRCS form No. CMM FM 9085-2 may be used for this purpose);
c) When relevant, details of the modifications and/or additions to the conformity evaluation processes for the type of cement.

The relevant documents and modifications and/or additions shall be described in the *NRCS Letter of Authority APPROVAL EXTENDED certificate*.

10.10.3 The inspector shall emboss the golden star on the *NRCS Letter of Authority APPROVAL EXTENDED certificate* with the NRCS emblem embossment machine.

10.10.4 The inspector shall sign the prepared *NRCS Letter of Authority APPROVAL EXTENDED certificate* and include it in the type-examination file.

10.11 The inspector shall forward the type-examination file to the Manager: Approvals for review.

10.12 Once satisfied with the contents of the inspection report and *NRCS Letter of Authority APPROVAL EXTENDED certificate*, the Manager: Approvals shall sign the aforementioned documents.

10.13 The inspector shall compile the following:

<p>ORIGINAL NRCS Letter of Authority APPROVAL EXTENDED certificate</p> <p style="text-align: center;">↓</p> <p>Attach to ORIGINAL certificate: COPIES of marked documents in paragraph 10.10.2.</p> <p style="text-align: center;">↓</p> <p>Submit to applicant.</p>	<p>COPY of NRCS Letter of Authority APPROVAL EXTENDED certificate</p> <p style="text-align: center;">↓</p> <p>Attach to COPY of certificate: ORIGINAL marked documents in paragraph 10.10.2.</p> <p style="text-align: center;">↓</p> <p>File in type-examination file.</p>
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- 10.14** The inspector shall notify the holder of the approval electronically or in writing that the approved *NRCS Letter of Authority APPROVAL EXTENDED certificate* shall be collected at the NRCS premises (see paragraph 5.1.1).
- 10.15** The inspector shall file a copy of the aforementioned notification in the type-examination file.
- 10.16** The inspector shall file the type-examination file in the appropriate product file for the type of cement.
- 10.17** The inspector shall store the product file in room C341 (see paragraph 5.1.4).

11 Withdrawal of approval

The Manager: Approvals shall ensure the following when the approval of a type of cement is withdrawn:

11.1 The approval of a type of cement may be withdrawn during the following conditions:

- a) When a CMM operations section responsible for surveillance inspections has submitted a written request for the withdrawal of approval. The written request shall include identified non-conformance/s of the cement type with the requirements of VC9085:2007;
- b) When the holder of the approval has failed to comply with the terms and conditions of issue of the *NRCS Letter of Authority APPROVAL GRANTED/EXTENDED certificates* that were issued for the cement type.

11.2 All entries of the type of cement shall be crossed out in the *LOA Database – Construction materials*.

11.3 APPROVAL WITHDRAWN certificate

11.3.1 A *NRCS Letter of Authority APPROVAL WITHDRAWN certificate* for cement as attached to this document shall be prepared.

11.3.2 The red star on the *NRCS Letter of Authority APPROVAL WITHDRAWN certificate* shall be embossed with the NRCS emblem embossment machine.

11.3.3 The Manager: Approvals shall sign the *NRCS Letter of Authority APPROVAL WITHDRAWN certificate*.

11.4 The following shall be submitted to the holder of the approval:

11.4.1 The **original** of the *NRCS Letter of Authority APPROVAL WITHDRAWN certificate*;

11.4.2 An electronic or written notification containing the following information as a minimum:

- a) The approval of the type of cement has been withdrawn in terms of paragraph 3 of the Compulsory Specification for cement as published by Government Notice No. R. 544 (Government Gazette No. 30023) of 6 July 2007;
- b) The reasons for the withdrawal of the approval;
- c) It will be an offence in terms of the requirements of sections 14(1) and (2) of the National Regulator for Compulsory Specifications Act, 2008 (Act No. 5 of 2008) to import, sell or supply the type of cement as identified in the *NRCS Letter of Authority APPROVAL WITHDRAWN certificate*;
- d) An instruction that the holder of the approval shall return all originals of *NRCS Letter of Authority APPROVAL GRANTED* and/or *EXTENDED certificates* that were issued for the cement type, to the NRCS within fourteen (14) days from the date of notification.

11.5 The following shall be filed in the appropriate product file (see paragraph 5.1.4) and client file (see paragraph 5.1.3):

- a) The written request for the withdrawal of the approval for a type of cement;
- b) A **copy** of the *NRCS Letter of Authority APPROVAL WITHDRAWN certificate*;
- c) A copy of the notification in paragraph 11.4.2.

12 Forms

The following forms are available at the following network location:

<L:\REGULAT\Electro LOA correspondance\HEPS\Controlled documents\Forms>

AA33: *'Goods dispatch and receipt note'*

CMM FM 9085-1: *'Items required for the approval of cement'*

CMM FM 9085-2: *'Technical file for cement'*

CMM FM 9085-3: *'Application for the approval of a type of cement'*

CMM FM 9085-4: *'Dispatching centre for cement'*

CMM FM 9085-5: *'Application for the extension of approval of a type of cement'*

Annexure A

Arrangement of approval number


Example of the arrangement of an approval number for a cement type:


AZ/9085/2007/0023

The above approval mark affixed to a cement bag shows that the cement type concerned has been approved under approval number AZ/9085/2007/0023. The approval number shows that this approval was granted in accordance with the requirements of the Compulsory Specification for cement (with reference number VC**9085**) as published by Government Notice No. R. 544 (Government Gazette No. 30023) of 6 July 2007 and that came into effect in the year **2007** in terms of Section 13(2)(b) of the National Regulator for Compulsory Specifications Act, 2008 (Act No. 5 of 2008).

Annexure B

APPROVAL REJECTED letter



	Your ref:
	Our ref: Approval of cement - APPROVAL REJECTED
	Enquiries:
	
	Technical file no:
«Company» «Title» «First» «Last» «Address» «City» «ZipPostal_Code» «Country»	Date: 02/07/2009 Page: 1 of 1

Dear Sir/Madam

Approval of cement: APPROVAL REJECTED

You are hereby notified that the application for the approval of the following type of cement has been rejected:

Cement type: [Manufacturer's name/trademark] [Brand name] [Standard designation in accordance with relevant product specification standard]
 Factory: [Factory identification]

Please refer to the following NRCS Inspection Report for the type-examination results:


NRCS Inspection Report No. XXX

The NRCS Inspection Report must be collected at the following premises:

NRCS Head Office
 SAHS Campus
 1 Dr. Letogon Road
 Greenkloof
 Pretoria

The NRCS Inspection Report will be disposed of if not collected within six (6) months from the date of this notification.

Yours faithfully,



T. Magolago (Mrs.)
 MANAGER: APPROVALS
 NRCS Chemicals, Mechanical & Materials Division

Head Office
 SAHS Campus 1 Dr. Letogon Road Greenkloof Pretoria
 ✉ NRCS Private Bag 275, Braamhof 0075
 ☎ Tel: +27 12 428 6020 • National Toll-free 1 800 6 611 427 • Fax: +27 12 428 5100
 @ www.nrccs.org.za

09/2013 FILED BY: 09/2013/0001 00/0000

Protecting health, safety, the environment and ensuring Fair Trade

Annexure C

“White cement”

- C.1** For documented evidence that “white” CEM cement or the so-called “white cement” is covered by the scope of VC9085:2007, see Appendix C1.
- C.2** For documented evidence that calcium aluminate cement (with a white or grey colour) is not covered by the scope of VC9085:2007, see Appendix C2.

Appendix C1

“White” CEM cement

C1.1 Introduction

The term “white cement” is nowhere defined in the Compulsory Specification for cement (herein referred to as VC9085:2007) as published by Government Notice No. R. 544 (Government Gazette No. 30023) of 6 July 2007 or the relevant South African National Standards as referred to in the compulsory specification. Therefore, there does not exist a commodity called “white cement” within the context of South African legislation.

The so-called “white cement” or “white Portland cement” is similar to ordinary, grey Portland cement in all respects except for its high degree of whiteness. Obtaining this colour requires substantial modification to the method of manufacture, and because of this, it is somewhat more expensive than the grey product.

C1.2 Background information

C1.2.1 *Uses*

White Portland cement is used in combination with white aggregates to produce white concrete for prestige construction projects and decorative work. White concrete usually takes the form of pre-cast cladding panels, since it is uneconomic to use white cement for structural purposes. White Portland cement is also used in combination with inorganic pigments to produce brightly coloured concretes and mortars. Ordinary cement, when used with pigments, produces colours that may be attractive, but are somewhat dull. With white cement, bright coloured concrete can be achieved. The pigments may be added at the concrete mixer. Alternatively, in order to guarantee repeatable colour, some manufacturers supply ready-blended coloured cements, using white cement as a base.

C1.2.2 *Manufacturing process*

C1.2.2.1 Raw mix formulation

The characteristic greenish-grey to brown colour of ordinary Portland cement derives from a number of transitional elements in its chemical composition. These are, in descending order of colouring effect, chromium, manganese, iron, copper, vanadium, nickel and titanium. The amount of these in white cement is minimized as far as possible. Cr_2O_3 is kept below 0,003%, Mn_2O_3 is kept below 0,03%, and Fe_2O_3 is kept below 0,35% in the clinker. The other elements are usually not a significant problem. Portland cement is usually made from cheap, quarried raw materials, and these usually contain substantial amounts of Cr, Mn and Fe. For example, limestone used in cement manufacture usually contain 0,3 - 1% Fe_2O_3 , whereas levels below 0,1% are sought in limestone for white cement manufacture. Typical clays used in grey cement raw mix may contain 5 - 15% Fe_2O_3 . Levels below 0,5% are desirable, and conventional clays are usually replaced with kaolin, a clay mineral. Kaolin is fairly low in SiO_2 , and so a large amount of sand is usually also included in the mix. Iron and manganese usually occur together in nature, so that selection of low-iron materials usually ensures that manganese content is also low, but chromium can arise from other sources, notably from the wear of chrome steel grinding equipment during the production of raw mix. This wear is exacerbated by the high sand-content of the mix, which makes it extremely abrasive. Furthermore, to make a combinable raw mix, the sand must be ground to below 45 μm particle diameter. Often this is achieved by grinding the sand separately, using ceramic grinding media to reduce contamination.

C1.2.2.2 Kiln operation

In general, the rotary kilns used to chemically combine the raw materials are operated at a higher peak temperature (1 450 – 1 500°C) than that required for grey clinker manufacture (1 400 – 1 450°C). This requires a higher fuel consumption (typically 20 - 50% more), and

results in lower kiln output (typically 20 - 50% less) for a given sized kiln. The reason for this is the relatively small amount of liquid produced during sintering, because of the low iron-content of the mix. The final reaction in the kiln, conversion of belite (dicalcium silicate, Ca_2SiO_4) to alite (tricalcium silicate, $\text{Ca}_3\text{O}.\text{SiO}_4$), requires the melt liquid as a solvent, and is slower if the amount of melt is low. This can be partially compensated by adding to the raw mix a combination of calcium sulphate and fluoride in the form of calcium fluoride or waste cryolite. This combination reduces the reaction temperature. In cases where the clinker Fe_2O_3 content is above 0,2% (which is almost always the case), the unique processes of "bleaching" and "quenching" are also employed. "Bleaching" involves directing a second flame (apart from that used to heat the kiln) onto the bed of clinker close to the kiln exit, in order to reduce Fe(III) to Fe(II). This reduction is rigorously avoided in grey cement production, because of the deleterious effect it can have on clinker quality. But in white clinker production, where the iron content is low, this is not an issue. Subsequently, in order to prevent the re-oxidation of the iron, "quenching" is performed. This consists of rapidly lowering the clinker temperature from 1 200°C to below 600°C in a few seconds, as it leaves the kiln. This usually involves dropping it into cold water. This contributes to the relatively poor energy efficiency of the process, since the sensible heat of the clinker is not recycled as in normal clinker manufacture.

C1.2.2.3 Clinker grinding and handling

The clinker is next ground to cement (perhaps after a drying stage). Here calcium sulphate is added to control set, in the form of a high-purity grade of gypsum or anhydrite. In some specifications a small amount of titanium dioxide may be added to improve reflectance. At all stages, great care is needed to avoid contamination with coloured materials.

C1.3 Technical requirements

- C1.3.1 White Portland cement differs physically from grey Portland cement only in terms of its colour. Its setting behaviour and strength development are essentially the same as that expected in grey cement
- C1.3.2 The same product specification standards such as ASTM C150 / C150M, EN 197-1 and SANS 50197-1 are applicable to white Portland cement as for grey Portland cement.
- C1.3.3 In practice, because much white cement is used in pre-cast concrete products, it is commonly made to a high early strength specification. This aids concrete manufacturers' production rates. Higher potential strength also helps to counteract the strength-diminishing effects of pigment addition.
- C1.3.4 Therefore, "white cement" shall comply with the requirements as set out in VC9085:2007. Therefore, it shall satisfy the requirements of SANS 50197-1 and its conformity shall be established in accordance with the requirements as set out in SABS EN 197-2.
- C1.3.5 Any exemptions from these requirements can create a loop hole in the regulatory system and will be unlawful in the application of the requirements of VC9085:2007 and Act No. 5 of 2008. E.g., in order to bypass regulatory requirements an unscrupulous seller may mix "white cement" with grey cement to lower the cost, creating an off-white or light grey product and then claim that it is a "white cement" that must be excluded from regulatory requirements.

Appendix C2

Calcium aluminate cement

C2.1 Background information

Calcium aluminate cement is cement consisting predominantly of hydraulic calcium aluminates. Alternative names are "aluminous cement", "high-alumina cement" and "cement fondue". It is used in a number of small-scale, specialist applications.

C2.2 History

The method of making cement from limestone and low-silica bauxite was patented in France in 1908 by Bied of the Pavin de Lafarge Company. The initial development was as a result of the search for cement offering sulphate resistance. The cement was called "Ciment Fondu". Subsequently, its other special properties were discovered, and these guaranteed its future in niche applications.

C2.3 Composition

The main active constituent of calcium aluminate cement is monocalcium aluminate (CaAl_2O_4). It usually contains other calcium aluminates as well as a number of less reactive phases deriving from impurities in the raw materials. Rather a wide range of compositions is encountered, depending on the application and the purity of aluminium source used.

Table C2.1 — Constituents of some typical calcium aluminate cement formulations

Oxide/mineral	General purpose	Buff	White	Refractory
SiO_2	4,0	5,0	2,7	0,4
Al_2O_3	39,4	53,0	62,4	79,6
Fe_2O_3	16,4	2,0	0,4	0
CaO	38,4	38,0	34,0	19,8
MgO	1,0	0,1	0,1	0
Na_2O	0,1	0,1	0	0
K_2O	0,2	0	0	0
TiO_2	1,9	1,8	0,4	0,1
Monocalcium aluminate (CaAl_2O_4)	46	70	70	35
Dodecacalcium hepta-aluminate	10	5	0	0
Monocalcium dialuminate	0	0	17	30
Belite	7	5	0	0
Gehlenite	4	14	11	1
Ferrite	24	5	2	0
Pleocroite	1	1	1	0
Wüstite	7	0	0	0
Corundum	0	0	0	33

The mineral phases all take the form of solid solutions with somewhat variable compositions.

C2.4 Manufacture

The cement is made by fusing together a mixture of a calcium-bearing material (normally limestone) and an aluminium-bearing material (normally bauxite for general purposes, or refined alumina for white and refractory cements). The liquefied mixture cools to a basalt-like clinker, which is ground alone to produce the finished product. Because complete melting usually takes place, raw materials in lump-form can be used. A typical kiln arrangement comprises a reverberatory furnace provided with a shaft pre-heater in which the hot exhaust gases pass upward as the lump raw material mix passes downward. The pre-heater recuperates most of the heat in the combustion gases, dehydrates and de-hydroxylates the bauxite and de-carbonates the limestone. The calcined material drops into the "cool end" of the melt bath. The melt overflows the hot end of the furnace into moulds in which it cools and solidifies. The system is fired with pulverized coal or oil. The cooled clinker ingots are crushed and ground in a ball-mill. In the case of high-alumina refractory cements, where the mix only sinters, a rotary kiln can be used.

C2.5 Reaction with water

The hydration reactions of calcium aluminate cements are very complex. The strength-developing phases are monocalcium aluminate, dodeca-calcium hepta-aluminate and belite. Calcium aluminoferrite, monocalcium dialuminate, gehlenite and Pleocroite contribute little to strength. The reactive aluminates react with water initially to form a mixture of $\text{CaO} \cdot \text{Al}_2\text{O}_3 \cdot 10 \text{H}_2\text{O}$, $2 \text{CaO} \cdot \text{Al}_2\text{O}_3 \cdot 8 \text{H}_2\text{O}$, $3 \text{CaO} \cdot \text{Al}_2\text{O}_3 \cdot 6 \text{H}_2\text{O}$ and $\text{Al}(\text{OH})_3$ gel, the amounts of each depending upon the curing temperature. The first two hydrates subsequently decompose to a mixture of $3 \text{CaO} \cdot \text{Al}_2\text{O}_3 \cdot 6 \text{H}_2\text{O}$, $\text{Al}(\text{OH})_3$ gel and water, this process being called "conversion". Because of the loss of water, conversion causes an increase in porosity, which can be accompanied by a decrease in strength. This need not be a problem in structural concrete provided that sufficiently high cement content and a sufficiently low water/cement ratio are employed.

C2.6 Applications

Because of their relatively high cost, calcium aluminate cements are used in a number of restricted applications:

- a) In construction concretes, rapid strength development is achieved, even at low temperatures;
- b) In construction concretes, high chemical resistance is possible;
- c) In refractory concretes, strength is maintained at high temperatures;
- d) As a component in blended cement formulations, various properties such as ultra-rapid strength development and controlled expansion can be obtained.

C2.7 Technical regulation of calcium aluminate cements within the ambit of VC9085:2007

C2.7.1 The scope of VC9085:2007 covers cement intended for construction use.

C2.7.2 Paragraph 2.3 of VC9085:2007 defines cement as "a hydraulic binder used for construction purposes described in either SANS 50197-1" for common cement, or SANS 50413-1 for masonry cement.

C2.7.3 The scope of SANS 50197-1 describes 27 distinct common cement products, termed CEM cement. Paragraph 4 of SANS 50197-1 states that the hydraulic hardening of CEM cement is primarily due to the hydration of calcium silicates. The sum of the proportions of reactive calcium oxide (CaO) and reactive silicon dioxide (SiO_2) in CEM cement shall be at least 50% by mass.

C2.7.4 Paragraph 4 of SANS 50197-1 also states that there are also cements whose hardening is mainly due to other compounds, e.g. calcium aluminate in calcium aluminate cement. Therefore, calcium aluminate cement is not covered by the scope of SANS 50197-1, since it

consists predominantly of hydraulic calcium aluminates (unlike CEM cement which consists predominantly of calcium silicates).

- C2.7.5 Since calcium aluminate cement is not covered by the scope of SANS 50197-1, it is not covered by the scope of VC9085:2007.

Bibliography

ASTM C150 / C150M: *'Standard Specification for Portland Cement'*

EN 197-1: *'Cement - Part 1: Composition, specifications and conformity criteria for common cements'*

http://en.wikipedia.org/wiki/Calcium_aluminate_cements (25/08/2008)

http://en.wikipedia.org/wiki/White_Portland_cement (2008)

Trade Metrology Act (Act No. 77 of 1973)

Revision record

Page/Paragraph/ Annexure/Appendix/ Figure/Table	Nature of revision
-	-

No.:

Date: 31/01/2013

Page: 1 of 5

1 Type-identifying information

Manufacturer's name/trademark: _____

Factory: _____

Brand name: _____

Common cement (SANS 50197-1:2000):

Standard designation: **cement EN 197-1 - CEM**

Masonry cement (SANS 50413-1:2004):

Standard designation: **Masonry cement EN 413-1 MC**

2 Applicant's details

Applicant's name: _____

3 General

3.1 Inspection method

- Type-examination of an application for the approval of a type of cement in accordance with the latest edition of Divisional Procedure No. CMM PROC 20.
- Type-examination of an application for the extension of approval of a type of cement in accordance with the latest edition of Divisional Procedure No. CMM PROC 20.
- Type-examination of an application for a Sales Permit for a type of cement in accordance with Divisional Procedure No. REG 003.

3.2 Items required

	Included		Acceptable	
	Yes	No	Yes	No
<u>Application for approval</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Applicant has submitted the items as communicated to him by means of NRCS form No. CMM FM 9085-1.				

Included		Acceptable	
Yes	No	Yes	No

Remarks:

4 Technical file

Technical file No.:

Inspection date/s:

4.1 Completeness and correctness of technical file in accordance with NRCS form No. CMM FM 9085-2

Included		Acceptable	
Yes	No	Yes	No

1 Application form

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
--------------------------	--------------------------	--------------------------	--------------------------

Application for approval

NRCS form No. CMM FM 9085-2.

NOTE The applicant shall be the manufacturer or importer of the cement type. The manufacturer or importer shall be an established legal entity within the Republic of South Africa.

Application for extension of approval

NRCS form No. CMM FM 9085-5.

Application for a Sales Permit

Sales Permit application form as set out in Divisional Procedure No. REG 003.

Remarks:

2 Technical specifications

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
--------------------------	--------------------------	--------------------------	--------------------------

A technical description of the cement type, indicating the following as a minimum:

- a) Constituents and its composition in the cement type in percentage by mass;
- b) Additives and its composition in the cement type in percentage by mass;
- c) Strength class of the cement type.

NOTE 1 See paragraphs 3.3, 3.4, 5 and 7.1 of the latest edition of SANS 50197-1 for guidance on CEM cement.

NOTE 2 See paragraphs 4 and 5.2 of the latest edition of SANS 50413-1 for guidance on masonry cement.

Remarks:

Included		Acceptable	
Yes	No	Yes	No

3 Packaging/commercial documents

Details of the marking of each size of bag in which the cement type will be supplied, or in the case of bulk supply, the information as contained in the commercial documents as required by Annexure B of VC9085:2007. The markings shall show the position intended for the approval number of the Letter of Authority referred to in paragraph 2.2 of Annexure A of VC9085:2007, using the words "LOA No.".

NOTE Details of the marking of each size of bag in which the cement type will be supplied may be demonstrated by means of an actual bag or a scale drawing of the bag. A scale drawing of the bag shall include an indication of the print size of the information on the bag, e.g. by means of an indicated scale or measurements.

Remarks:

4 Certificate of conformity

A certificate of conformity that was issued by a certification body in accordance with paragraphs 7 and 8.1 of the latest edition of SABS EN 197-2 for the cement type and its factory, demonstrating compliance with the latest editions of the appropriate South African National Standards as referred to in VC9085:2007.

NOTE 1 Only certificates of conformity from a certification body that was accredited by a signatory to the International Accreditation Forum's Mutual Recognition Agreement in accordance with the latest edition of ISO/IEC Guide 65 shall be accepted as proof of compliance with the latest editions of the appropriate South African National Standards as set out in VC9085:2007.

NOTE 2 Certificates of conformity shall satisfy the requirements of paragraph 8.2 of the latest edition of SABS EN 197-2.

Product certification body:

Certificate No.:

Remarks:

5 Importers

In accordance with the requirements of paragraph 3.2 of VC9085:2007 an importer shall satisfy the requirements for an intermediary as defined in paragraph 9 of the latest edition of SABS EN 197-2, and shall appoint a certification body to perform the tasks as set out in paragraphs 9.3.1 and 9.3.2 of the latest edition of SABS EN 197-2. The applicant who will be the importer of a cement type shall identify the following by means of NRCS form No. CMM FM 9085-4:

- a) All dispatching centres for the dispatch of the imported cement type after transfer or storage where the applicant has full responsibility for all aspects of the quality of the cement type;
- b) The laboratory that will undertake confirmation autocontrol testing in accordance with 9.2.2 of the latest edition of SABS EN 197-2 of the cement type handled at the identified dispatching centres;
- c) The third party conformity assessment body that will undertake the surveillance, assessment and acceptance of the measures to maintain the cement quality and of the confirmation autocontrol tasks as set out in paragraphs 9.3.1 and 9.3.2 of the latest edition of SABS EN 197-2 at the identified dispatching centres for the cement type.

NOTE 1 This part of the technical file is only applicable to imported cement.

NOTE 2 Only a third party conformity assessment body that was accredited by a signatory to the International Accreditation Forum's Mutual Recognition Agreement shall be acceptable.

Remarks:

6	Other	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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Any other materials that the applicant has included in the technical file and that were considered for the type-examination process.

Remarks:

4.2 Suitability of technical file with respect to demonstrating compliance with VC9085:2007

The technical file was inspected for compliance with the requirements of the Compulsory Specification for cement (herein referred to as VC9085:2007) as published by Government Notice No. R. 544 (Government Gazette No. 30023) of 6 July 2007.

This part of the inspection report should be read in conjunction with VC9085:2007.

VC9085:2007 Requirements	EXAMINATION OF TECHNICAL FILE	ACCEPTABLE	
		Yes	No
3	Requirements		
3.1	<i>A certificate of conformity that was issued by a certification body in accordance with paragraphs 7 and 8.1 of SABS EN 197-2:2000 shall be examined for evidence of compliance.</i>	<input type="checkbox"/>	<input type="checkbox"/>
3.2	<i>NRCS form No. CMM FM 9085-4 shall be examined for evidence of compliance.</i>	<input type="checkbox"/>	<input type="checkbox"/>
3.3	<i>A certificate of conformity that was issued by a certification body in accordance with paragraphs 7 and 8.1 of SABS EN 197-2:2000 and NRCS form No. CMM FM 9085-4 shall be examined for evidence of compliance.</i>	<input type="checkbox"/>	<input type="checkbox"/>
Annexure B	<p>Markings that shall appear on packaging</p> <p><i>Details of the marking of the smallest package unit for the cement type, or in the case of bulk supply, the information as contained in the commercial documents shall be examined for evidence of compliance.</i></p> <ul style="list-style-type: none"> • <u>Bagged cement</u> <i>The requirements of paragraphs 5.1, 5.4, 5.5 and 5.7 of the latest edition of SANS 289 shall be used as criteria to establish compliance with the Trade Metrology Act (Act No. 77 of 1973) in so far as the statement of quantity that shall be indicated on each bag of cement.</i> • <u>Bulk supply</u> <i>The applicable requirements of Annex A of the latest edition of SANS 289 shall be used as criteria to establish compliance with the Trade Metrology Act (Act No. 77 of 1973) in so far as the statement of quantity that shall be indicated in the commercial documents for bulk supply.</i> 		

VC9085:2007 Requirements	EXAMINATION OF TECHNICAL FILE	ACCEPTABLE	
		Yes	No
1	Masonry cement	<input type="checkbox"/>	<input type="checkbox"/>
2	Common cement	<input type="checkbox"/>	<input type="checkbox"/>

5 Remarks

-

6 Conclusion

	Yes	No	N/A ¹
Technical file complete and correct in accordance with NRCS form No. CMM FM 9085-2:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Technical file satisfied the requirements of VC9085:2007:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Remarks:

Type of cement recommended for approval in accordance with Annexure A of VC9085:2007:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Type of cement recommended for an extension of approval:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Type of cement recommended for a Sales Permit in terms of section 14(4) of the National Regulator for Compulsory Specifications Act, 2008 (Act No. 5 of 2008):	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Remarks:

Inspected by:

Name: _____

Designation: NRCS CMM Division

Signature: _____

Reviewed by:

Name: _____

Designation: Manager: Approvals
NRCS CMM Division

Signature: _____

---oOo---

¹ Not applicable

