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HANFORD ENGINEER WORKS

STANDARD PROCEDURE FOR RECEIVING

ESSENTIAL MATERIALS

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PREPARED BY

DU PONT TECHNICAL DEPARTMENT

LABORATORIES DIVISION

SEPTEMBER 1945

HANFORD ENGINEER WORKS

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P R E F A C E

STANDARD PROCEDURE FOR RECEIVING ESSENTIAL MATERIALS

1. **Manuals:** The subject manuals are issued by the Laboratories Division of the Technical Department. This Division will be responsible for distribution of the manuals, making authorized revisions, editing, etc. For information with respect to the manuals, please address any communications to Chief Supervisor, Laboratories Division, Building 3706.
2. **Purpose:** These procedures are presented for the purpose of standardizing the methods of receiving and accepting Essential Materials purchased for use on this Works.
3. **Specifications:** The specifications given herein are those applicable at the date of writing and are subject to change.
4. **Tests:** The constituents listed under this heading are those which are actually checked by analysis. The analyses performed are subject to change as additional experience is gained.
5. **Sampling:** All Essential Materials are sampled by a representative of the department which uses the material. The necessary containers can be procured from the laboratory to which the sample is delivered. Sampling shall be made in accordance with the procedures set forth in the manual titled "Sampling Methods and Sample Summaries".

Hanford Engineer Works
September, 1945

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ANALYTICAL REPORTS

The original individual analytical work reports are filed in the Laboratories Division Office, Building 3706.

A daily summary of analyses on Essential Materials will be issued by the Laboratories Division of the Technical Department. Copies of this report are distributed at the present time, as follows:

<u>No. of Copies</u>	<u>Office</u>
1	Area Engineer
1	Essential Material Control
3	Accounts Payable
1	"S" Superintendent
1	"P" Superintendent
1	Power - Field Office
1	Technical - Power Superintendent
1	Laboratories Division - File

This summary includes a positive statement to the effect that materials comply with specifications; where specifications are not met, the specific items wherein there is non-compliance are set forth definitely.

Where Essential Materials do not meet specification requirements they will be rejected except where prior approval for use is obtained as outlined under "Out-of-Specification Materials" p. VII. If such approval is obtained, it will be stated that the material is acceptable for use, otherwise it will be stated that it is rejected.

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September, 1945

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OUT-OF SPECIFICATION MATERIAL

If any material fails to meet specifications, the Laboratories Division will notify the Technical Superintendent and the Superintendent of the consuming Area. The material will not be used unless it is necessary, and unless there is dual approval by these two offices. Said approval may be obtained orally in order to make necessary material available, but in each case, a written statement signed by both offices to the effect that the material is deemed suitable for use, even though specifications are not met, will be obtained. The origination of this memorandum shall be the responsibility of the Laboratories Division - Technical Department. The completed form will comprise part of their file records.

In the absence of the above approval, the material will be rejected.

Where numerous shipments are on the lower limits of quality or below specifications, the Laboratories Division will supply the Accounting Department with this information in order that the Control Division in Wilmington can be advised and a formal complaint made to the vendor.

Hanford Engineer Works
September, 1945

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REVISIONS

Recommendations for revision to specifications on Essential Materials must be sent to the offices of the Technical Superintendent and the interested Operating Area Superintendent, as well as to the Laboratories Division of the Technical Department (Att: Chief Supervisor, Building 3706). The copy sent to the Laboratories Divisions will be used for approval signatures of the above offices, and will be the authority for issuance of revisions to the Essential Material Manual. No changes in existing specifications will be made without the dual approval of these offices.

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September, 1945

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HANFORD ESSENTIAL WORKS

STANDARD PROCEDURE FOR RECEIVING ESSENTIAL MATERIALS

Acenaphthene - 300 Area

1. Specification: HEW Specification #501
 - a) Melting point 92.5 - 95.0°C
2. Test for:
 - a) Melting Point
 - b) Solubility
3. Sampling: An 8 oz. sample of each shipment shall be delivered to the Essential Material Laboratory, Building 3706.
4. Allowable Tolerance: None

E. I. du Pont de Nemours
Technical Superintendent

Corps of Engineers
Chief of Production

Approved J. J. [Signature]
Date 9/26/45

Approved _____
Date _____
Benjamin [Signature]
9/26/45

[REDACTED]

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HANFORD ENGINEER WORKS

STANDARD PROCEDURE FOR RECEIVING ESSENTIAL MATERIALS

Alum, Commercial Grade, 100 Area

1. Specifications: None
2. Test for: Analyzed on request only
3. Sampling: A 16 oz. sample shall be delivered to the Essential Material Laboratory, Building 3706 with each request for analyses.

E. I. du Pont de Nemours
Technical Superintendent

Corps of Engineers
Chief of Production

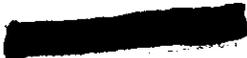
Approved [Signature]

Approved _____

Date 7/6/45

Date _____

Benjamin R. Rogers
1/10/45



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HANFORD ENGINEER WORKS

STANDARD PROCEDURE FOR RECEIVING ESSENTIAL MATERIALS

Aluminum - 300 Area

1. Specification: HEW Specification #302

- | | |
|------------------------------------|------------|
| a) Copper | 0.20% Max. |
| b) Iron | 0.50% Max. |
| c) Manganese | 0.03% Max. |
| d) Magnesium | 0.03% Max. |
| e) Zinc | 0.03% Max. |
| f) Nickel | 0.03% Max. |
| g) Tin | 0.03% Max. |
| h) Acid Insoluble (Reported as Si) | 0.10% Max. |

2. Test for:

- a) Copper
- b) Iron
- c) Manganese*
- d) Magnesium*
- e) Zinc*
- f) Nickel*
- g) Tin*
- h) Acid Insoluble (Reported as Si)

*Analysis for these constituents to be made on a composite sample from every five consecutive shipments received.

If analysis of the composite indicate the material to be out -of- specifications, each individual sample in the composite will be analyzed separately.

3. Sampling: Three ingots or bars from each lot shall be delivered to the Essential Material Laboratory Building 3706.

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- 4. Allowable Tolerance: None
- 5. Revision #1, June 1, 1946

E. I. du Pont de Nemours
Technical Superintendent

Corps of Engineers
Chief of Production

Approved M. C. Ray

Approved Henry E. Kincaid

Date 6/1/46

Date 10 June 1946

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Rev. 6/1/46

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HANFORD ENGINEER WORKS

STANDARD PROCEDURE FOR RECEIVING ESSENTIAL MATERIALS

Aluminum Cans - 300 Area

1. Specification: HEW Specification # 303

a) Copper	0.20% Max.
b) Iron	0.50% Max.
c) Manganese	0.03% Max.
d) Magnesium	0.03% Max.
e) Zinc	0.03% Max.
f) Nickel	0.03% Max.
g) Tin	0.03% Max.
h) Acid Insoluble (Reported Si)	0.10% Max.

2. Test for:

- a) Copper
- b) Iron
- c) Manganese*
- d) Magnesium*
- e) Zinc*
- f) Nickel*
- g) Tin*
- h) Acid Insoluble (Reported as Si)

*Analysis for these constituents to be made on a composite sample from every five consecutive shipments received.

If analysis of the composite indicate the material to be out -of- specifications, each individual sample in the composite will be analyzed separately.

3. Sampling: Three cans from each shipment or lot shall be submitted to the Essential Material Laboratory, Building 3706.

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4. Allowable Tolerance: None

5. Revision #1, June 1, 1946

E. I. du Pont de Nemours
Technical Superintendent

Corps of Engineers
Chief of Production

Approved *H. C. King*

Approved *Harvey E. Spencer*

Date *6/1/46*

Date *10 June 1946*

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Rev. 6/1/46



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HANFORD ENGINEER WORKS

STANDARD PROCEDURE FOR RECEIVING ESSENTIAL MATERIALS

Aluminum Caps - Boss Type - 300 Area

1. Specification: HEW Specification # 304

a) Copper	0.20% Max.
b) Iron	0.50% Max.
c) Manganese	0.03% Max.
d) Magnesium	0.03% Max.
e) Zinc	0.03% Max.
f) Nickel	0.03% Max.
g) Tin	0.03% Max.
h) Acid Insoluble (Reported as Si)	0.10% Max.

2. Test for:

- a) Copper
- b) Iron
- c) Manganese*
- d) Magnesium*
- e) Zinc*
- f) Nickel*
- g) Tin*
- h) Acid Insoluble (Reported as Si)

*Analysis for these constituents to be made on a composite sample from every five consecutive shipments received.

If analysis of the composite indicate the material to be out -of- specifications, each individual sample in the composite will be analyzed.

3. Sampling: Three caps from each shipment or lot shall be delivered to the Essential Material Laboratory, Building 3706.

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4. Allowable Tolerance: None

5. Revision #1, June 1, 1946.

E. I. du Pont de Nemours
Technical Superintendent

Corps of Engineers
Chief of Production

Approved: *H. C. Kay*

Date *6/1/46*

Approved *Harvey E. Skinner*

Date *10 June, 1946*

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Rev. 6/1/46



HANFORD ENGINEER WORKS

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STANDARD PROCEDURE FOR RECEIVING ESSENTIAL MATERIALSAluminum Caps - Detail B - 300 Area

1. Specifications: HEW Specifications # 305

a) Copper	0.20% Max.
b) Iron	0.50% Max.
c) Magnesium	0.03% Max.
d) Manganese	0.03% Max.
e) Zinc	0.03% Max.
f) Nickel	0.03% Max.
g) Tin	0.03% Max.
h) Acid Insoluble (Reported as Si)	0.10% Max.

2. Test for:

- a) Copper
- b) Iron
- c) Magnesium*
- d) Manganese*
- e) Zinc*
- f) Nickel*
- g) Tin*
- h) Acid Insoluble (Reported as Si)

*Analysis for these constituents to be made on a composite sample from every five consecutive shipments received.

If analysis of the composite indicate the material to be out -of- specifications, each individual sample in the composite will be analyzed separately.

3. Sampling: Three caps from each shipment or lot shall be delivered to the Essential Materials Laboratory, Building 3706.

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STANDARD PROCEDURE FOR RECEIVING ESSENTIAL MATERIALS

Aluminum - Silicon - 300 Area

1. Specifications: HEW Specification #305

a) Silicon	11.5 - 12.5%
b) Copper	0.10% Max.
c) Iron	0.50% Max.
d) Manganese	0.05% Max.
e) Magnesium	0.05% Max.
f) Zinc	0.05% Max.
g) Nickel	0.05% Max.
h) Tin	0.05% Max.
i) Balance of Impurities	0.10% Max.

2. Test for:

- a) Silicon
- b) Copper
- c) Iron
- d) Manganese
- e) Magnesium
- f) Zinc
- g) Nickel
- h) Tin
- i) Aluminum (by difference)

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3. Sampling: Three ingots or bars from each shipment shall be delivered to the Essential Material Laboratory, Building 3706.

4. Allowable Tolerance: None

E. I du Pont de Nemours
Technical Superintendent

Corps of Engineers
Chief of Production

Approved L. Squier

Approved _____

Date 9/26/45

Date _____

Benjamin R. Rogers
9/26-45

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STANDARD PROCEDURE FOR RECEIVING ESSENTIAL MATERIALS

Ammonium Silico Fluoride (Ammonium Fluosilicate) 200 Area

1. Specifications: HEW Specification #28
 - a) Ammonium Silico Fluoride 98.0% Min.
 - b) Water Insolubles 0.30% Max.
2. Test for:
 - a) Ammonium Silico Fluoride
 - b) Water Insolubles
3. Sampling: A 16 oz. sample of each shipment shall be delivered to the Essential Material Laboratory, Building 3706.
4. Allowable Tolerance: None

E. I. du Pont de Nemours
Technical Superintendent

Corps of Engineers
Chief of Production

Approved L. Quinn

Approved Royce

Date 9/26/45

Date 9/24/45

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HANFORD ENGINEER WORKS

STANDARD PROCEDURE FOR RECEIVING ESSENTIAL MATERIALS

Argon - 300 Area

1. Specifications: Contract #1, Expires 3/1/46
 - a) Must pass "use" test.
2. Test for:
 - a) Must pass "use" test as applied by Production department
3. Sampling: Each cylinder is tested by trying it for its intended use.
4. Allowable Tolerance - The material must be suitable for its intended use.

E. I. du Pont de Nemours
Technical Superintendent

Corps of Engineers
Chief of Production

Approved *J. Squires*

Approved _____

Date *9/26/45*

Date _____

Benjamin Rogers
9/26-45



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HANFORD ENGINEER WORKS

STANDARD PROCEDURE FOR RECEIVING ESSENTIAL MATERIALS

Barium Chloride, Powdered - 300 Area

1. Specifications: HEW Specification #308

- a) Insolubles 0.010% Max.
- b) Alkali Salts as SO₄ 0.050% Max.
- c) Strontium & Calcium Chlorides 0.01% Max.
- d) Nitrate and Chlorate to pass test
- e) Heavy Metals to pass test

2. Test for:

- a) Insolubles
- b) Alkali Salts as SO₄
- c) Strontium & Calcium Chlorides
- d) Nitrate & Chlorate ACS test '41 p35
- e) Heavy Metals ACS test '41 p35

3. Sampling: A 16 oz. sample of each shipment shall be delivered to the Essential Material Laboratory, Building 3706.

4. Allowable Tolerances: None

E. I. du Pont & Nemours
Technical Superintendent

Corps of Engineers
Chief of Production

Approved L. Squires

Approved _____

Date 9/26/45

Date _____

Benjamin S. Rogers
19/26-45-1

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HANFORD ENGINEER WORKS

STANDARD PROCEDURE FOR RECEIVING ESSENTIAL MATERIALS

Bismuth Subnitrate - 200 Area

- 1. Specification: Contract #17, Expires 8/31/45
 - a) Bi_2O_3 (Bi) 79% Min.
71% Min.)
 - b) Contract carries specification test procedures

2. Test for: *

- a) Bi
- b) Chlorides
- c) Nitric Acid Insoluble
- d) Hydrochloric Acid Insolubles

* Testing procedures must duplicate those in contract.

- 3. Sampling: A 16 oz. sample of each shipment shall be delivered to the Essential Material Laboratory, Building 3706.

- 4. Allowable Tolerance: None

E. I. du Pont de Nemours
Technical Superintendent

Corps of Engineers.
Chief of Production.

Approved J. H. ...

Approved Benjamin T. Keyser

Date 9/26/45

Date 9/26-45

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STANDARD PROCEDURE FOR RECEIVING ESSENTIAL MATERIALS

Bronze - 300 Area

1. Specifications: HEW Specification #309
 - a) Copper 45-49% by weight
 - b) Tin 51-55% by weight
2. Test for:
 - a) Copper
 - b) Tin
3. Sampling: Three ingots or bars from each shipment or lot shall be delivered to the Essential Material Laboratory, Building 3706.
4. Allowable Tolerance: None

E. I. du Pont de Nemours
Technical Superintendent

Corps of Engineers
Chief of Production

Approved L. Aquino

Approved _____

Date 9/26/45

Date _____

Benjamin Royce
9/26-45

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STANDARD PROCEDURE FOR RECEIVING ESSENTIAL MATERIALS

Calcium Chloride (Anhydrous) - 300 Area

1. Specifications: HEW Specification # 331
 - a) Calcium Chloride 94.0% Min.
 - b) Water Insolubles 0.20% Max.
2. Test for:
 - a) Calcium Chloride
 - b) Water Insolubles
3. Sampling: A 16 oz. sample of each shipment shall be delivered to the Essential Materials Laboratory, Building 3706.
4. Allowable Tolerance: None

E. I. du Pont de Nemours
Technical Superintendent

Corps of Engineers
Chief of Production

Approved [Signature]

Approved [Signature]

Date 6/7/46

Date 10/1/46

6/7/46



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HANFORD ENGINEER WORKSSTANDARD PROCEDURE FOR RECEIVING ESSENTIAL MATERIALSCarbon Tetrachloride - 300 Area

1. Specifications: HEW Specification #310

- | | |
|---------------------------|---|
| a) Boiling range @ 760 mm | 75.0° : - 77.5° : |
| b) Acid | Neutral to methyl red |
| c) Residue | 0.002% Max. |
| d) Appearance | Clear, colorless, no suspended material |

2. Test for:

- a) Boiling range
- b) Residue
- c) Appearance

3. Sampling: A 16 oz. sample of each shipment shall be delivered to the Essential Material Laboratory, Building 3706.

4. Allowable Tolerance: Boiling range 73.0° C Min.

5. Revision #1, January 18, 1946.
Revision #2, November 1, 1946.

General Electric Company
Technical Superintendent

Corps of Engineers
Chief of Production

Approved

AB. Greeninger

Date

11-1-46

Approved

[Signature]

Date

11-6-46

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HANFORD ENGINEER WORKS

STANDARD PROCEDURE FOR RECEIVING ESSENTIAL MATERIALS

Ceric Ammonium Nitrate - 200 Area

1. Specifications: HEW Specification #3

- a) Ceric Ammonium Nitrate 90.0% Min.
- b) Chlorides 0.01% Max.
- c) Nitric Acid Insoluble 0.30% Max.

2. Test for:

- a) Ceric Ammonium Nitrate
- b) Chlorides
- c) Nitric Acid Insolubles

3. Sampling: A 16 oz. sample of each shipment shall be delivered to the Essential Material Laboratory, Building 3706.

4. Allowable Tolerance: None

E. I. du Pont de Nemours
Technical Superintendent

Corps of Engineers.
Chief of Production

Approved L. Agnew

Approved Benjamin R. Ryan

Date 9/26/45

Date 9/26/45



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HANFORD ENGINEER WORKS

STANDARD PROCEDURE FOR RECEIVING ESSENTIAL MATERIALS

Copper - 300 Area

1. Specifications: HEW Specification #311
 - a) Copper 99.90% Min
2. Test for:
 - a) Copper
3. Sampling: Three ingots or bars from each shipment or lot shall be delivered to the Essential Material Laboratory, Building 3706.
4. Allowable Tolerance: None

E. I. du Pont de Nemours
Technical Superintendent

Corps of Engineers
Chief of Production

Approved J. Rogers

Approved _____

Date 4/6/45

Date _____

Benjamin Rogers
1/24-45

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HANFORD ENGINEER WORKS

STANDARD PROCEDURE FOR RECEIVING ESSENTIAL MATERIALS

COAL - ALL AREAS

- 1. Specifications: None
- 2. Test for:
 - a) Moisture
 - b) Volatile Matter *
 - c) Fixed Carbon *
 - d) Ash *
 - e) Sulfur *
 - f) Heating value in BTU *

* Results calculated on dry basis

3. Sampling: (a) On long term contracts every tenth car from each vendor is sampled. This sampling frequency also applies to coal secured on "spot purchases" except where it is used for test purposes in which event samples are taken more frequently.

(b) For each car sampled an 8 oz sealed bottle of 60 mesh coal and a five pound "as received" sample shall be delivered to the Essential Material Laboratory, Building 3706.

4. Remarks: (a) Analytical results are reported on a dry basis where indicated.

(b) The average analyses of coal supplied from each source must approximate the "typical analysis" set forth in the contract for each respective vendor.

(c) Contract giving "typical analysis" are now in effect with the following vendors:

Sheridan Wyoming - Contract #41, Expires 6/30/46
Big Horn - Contract #36, Expires 6/30/46

E. I. du Pont de Nemours
Technical Superintendent

Corps of Engineers
Chief of Production

Approved [Signature]

Approved [Signature]

Date 8/10/45

Date 9/6/45 ^{my} CE

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HANFORD ENGINEER WORKS

STANDARD PROCEDURE FOR RECEIVING ESSENTIAL MATERIALS

Coal - Village

- 1. Specifications: None
- 2. Test for:
 - a) Moisture
 - b) Volatile Matter*
 - c) Fixed Carbon*
 - d) Ash *
 - e) Sulfur*
 - f) Heating Value in BTU*

*Results calculated on dry basis

- 3. Sampling: A sample shall be taken from the pile equivalent to every tenth car or once a week, whichever is less, and shall be delivered to the Essential Material Laboratory, Building 3706.

Increments of one shovelfull each shall be taken at equidistant points around the circumference of the pile about midway from the top to the bottom until ten shovelfulls have been separated. Three large lumps shall be added to this amount and the entire quantity reduced to 1/2" size. This "gross sample" shall be quartered until approximately ten pounds of coal remains for delivery to the laboratory.

- 4. Remarks: (a) Analytical results are reported on a dry basis where indicated.
- (b) The laboratory will conduct the final preparation of the sample for analysis.

E. I. du Pont de Nemours
Technical Superintendent

Corps of Engineers
Chief of Production

Approved *A. Squires*

Approved *Sergeant Rogers*

Date *9/26/45*

Date *9/26-45*

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HANFORD ENGINEER WORKS

STANDARD PROCEDURE FOR RECEIVING ESSENTIAL MATERIALS

Duponol, M3 Dry - 300 Area

1. Specifications: None

2. Test for:

Material analyzed on request only.

3. Sampling:

A 16 oz. sample shall be delivered to the Essential Material Laboratory, Building 3706 with each request for analysis.

4. Remarks:

Tests are run on this material for identification purposes only.

5. Revision #1 November 1, 1946

General Electric Company
Technical Superintendent

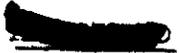
Approved *W.B. Granger*

Date 11-1-46

Corps of Engineer
Chief of Production

Approved *Francis J. Skinner*

Date 11-6-46



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HANFORD ENGINEER WORKS

STANDARD PROCEDURE FOR RECEIVING ESSENTIAL MATERIALS

Ferric Sulfate (Ferrifloc) - 100 Area

1. Specification: Contract #605, Expires 10/31/45

"Typical Analysis" as given in contract"

a) Fe (SO ₄) ₃	75% (72% Min)
b) Fe SO ₄	0.8%
c) Si O ₂	0.7%) 5% Max.
d) Other insolubles	3.0%
e) Calcium	0.25%
f) Magnesium	0.05%
g) Alumina	0.30%) 0.5% Max.
h) Copper	0.05%
i) Zinc	0.08%
j) Lead	0.07%
k) Water of crystallization	12.2%
l) Remaining water of crystallization	2.0%
m) Sulfates other than iron	4.0%
n) Free acid	1.0%

2. Test for:

- a) Total water
- b) Iron
- c) Water insolubles

3. Sampling: A 16 oz. sample of each shipment shall be delivered to the Essential Material Laboratory, Building 5706.

4. Remarks: "Ferrisol" is sometimes purchased in place of "Ferrifloc". See page 19A for description.

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5. Allowable Tolerance:

- a) Total water 14.5% Max.
- b) Iron 20.4% Min
- c) Water insolubles 11.0% Max.

E. I. du Pont de Nemours
Technical Superintendent

Corps of Engineers
Chief of Production

Approved *L. J. [unclear]*

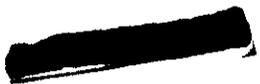
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Date *7/26/47*

Date _____

Benjamin [unclear] Roy [unclear]
7/26-47

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HANFORD ENGINEER WORKS

STANDARD PROCEDURE FOR RECEIVING ESSENTIAL MATERIALS

Ferric Sulfate (Ferrisol) - 100 Area

1. Specification: Contract #605, Expires 10/31/45

This material is purchased under the same contract to supplement the supply of "Ferrifloc" and is acceptable for use if it meets the requirements set forth in paragraph 4.

2. Test for:

- a) Total Water
- b) Iron
- c) Water Insolubles

3. Sampling: A 16 oz. sample of each shipment shall be delivered to the Essential Material Laboratory, Building 3706.

4. Allowable Tolerance:

- a) Total Water 1.0% Max.
- b) Iron 25.0% Min
- c) Water insolubles 11.0% Max.

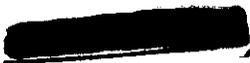
E. I. du Pont de Nemours
Technical Superintendent

Approved [Signature]
Date 9/26/45

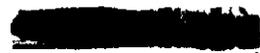
Corps of Engineers
Chief of Production

Approved [Signature]
Date 9/24/45

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HANFORD ENGINEER WORKS

STANDARD PROCEDURE FOR RECEIVING ESSENTIAL MATERIALS

Ferrous Ammonium Sulfate - 200 Area

1. Specification: HEW Specification #1
 - a) $Fe (NH_4)_2 (SO_4)_2 \cdot 6 H_2O$ 93.0% Min.
 - b) Chlorides 0.01% Max.
 - c) Insolubles 0.01% Max.
2. Test for:
 - a) Ferrous Ammonium Sulfate
 - b) Chlorides
 - c) Insolubles
3. Sampling: A 16 oz. sample from each shipment shall be delivered to the Essential Material Laboratory, Building 3706.
4. Allowable Tolerance: None

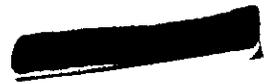
E. I. du Pont de Nemours
Technical Superintendent

Corps of Engineers
Chief of Production

Approved J. Services
Date 9/26/45

Approved [Signature]
Date [Signature]
Benjamin R. [Signature]
11/26-45

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HANFORD ENGINEER WORKS

STANDARD PROCEDURE FOR RECEIVING ESSENTIAL MATERIALS

Fluosilicic Acid - 300 Area

1. Specification: HEW Specification #312

- a) Grade CP or reagent grade
- b) Assay as H_2SiF_6 20-30%
- c) Non Volatile 0.25% Max.
- d) Chlorides 0.02% Max.
- e) Sulfates 0.05% Max.

2. Test for:

- a) Assay as H_2SiF_6
- b) Non Volatile
- c) Chlorides
- d) Sulfates

3. Sampling:

A 1 lb. sample in the original container from each shipment shall be delivered to the Essential Material Laboratory, Building 3706.

4. Allowable Tolerance:

5. Revision #1 November 1, 1946

General Electric Company
Technical Superintendent

Corps of Engineers
Chief of Production

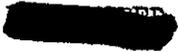
Approved *AB Granger*

Approved *Harry E. ...*

Date 11-1-46

Date 11-6-46





HANFORD ENGINEER WORKS

STANDARD PROCEDURE FOR RECEIVING ESSENTIAL MATERIALS

Hydrofluoric Acid - 300 Area

1. Specification: None

2. Test for:

Material analyzed on request only.

3. Sampling:

Due to the safety hazards involved, no samples are taken.

4. Remarks:

Samples may be submitted for analysis upon special request.

5. Revised: 10-30-46

General Electric Company
Technical Superintendent

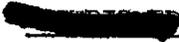
Corps of Engineers
Chief of Production

Approved W.B. Granger

Approved Harvey Stander

Date 11-1-46

Date 11-6-46





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3 31 77

HANFORD ENGINEER WORKS

STANDARD PROCEDURE FOR RECEIVING ESSENTIAL MATERIALS

Hydrogen Fluoride - 200 Area

- 1. Specification: None
- 2. Test for: Not analyzed
- 3. Sampling: Due to the safety hazards involved, no samples are taken.

E. I. du Pont de Nemours
Technical Superintendent

Corps of Engineers
Chief of Production

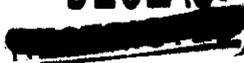
Approved [Signature]

Approved _____

Date 7/26/45

Date [Signature] ROYER
1/20-46

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HANFORD ENGINEER WORKS

STANDARD PROCEDURE FOR RECEIVING ESSENTIAL MATERIALS

Hydrogen Peroxide - 200 Area

1. Specification: HEW Specification #24
 - a) Hydrogen peroxide - 27.5% Min.
 - b) Iron 0.5 ppm
2. Test for:
 - a) Hydrogen peroxide
 - b) Iron
3. Sampling: A 16 oz. sample from each shipment shall be delivered to the Essential Material Laboratory, Building 3706.
4. Allowable Tolerance: None

E. I. du Pont de Nemours
Technical Superintendent

Corps of Engineers
Chief of Production

Approved *S. J. ...*

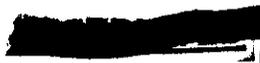
Approved _____

Date *7/26/45*

Date _____
Benjamin Rogers
7/26-45

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HANFORD ENGINEER WORKS

STANDARD PROCEDURE FOR RECEIVING ESSENTIAL MATERIALS

Hydromite - 300 Area

1. Specifications: None
2. Test for:
 - a) pH
 - b) Solubility in water
 - c) Chlorides
 - d) Flash Point
 - e) Fire Point
3. Sampling: A 16 oz. sample from each shipment shall be delivered to the Essential Material Laboratory, Building 3706.
4. Remarks: Tests are run on this material for identification purposes only.

W.
E. I. du Pont de Nemours
Technical Superintendent

Corps of Engineers
Chief of Production

Approved [Signature]

Approved _____

Date 9/26/45

Date _____

[Signature]
19/26-457

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HANFORD ENGINEER WORKS

STANDARD PROCEDURE FOR RECEIVING ESSENTIAL MATERIALS

Lanthanum Ammonium Nitrate - 200 Area

1. Specification: Contract #26, Expires 9/30/46
 - a) Lanthanum 23.0% Min.
 - b) Nitric Acid Insolubles (80°C) 0.10% Max.
 - c) Chlorides 0.01% Max.
2. Test for:
 - a) Lanthanum
 - b) Insolubles
 - c) Chlorides
3. Sampling: A 16 oz. sample from each shipment shall be delivered to the Essential Material Laboratory, Building 3706.
4. Allowable Tolerance: None

E. I. du Pont de Nemours
Technical Superintendent

Corps of Eng
Chief of Pro

Approved J. D. Lewis

Approved _____

Date 9/26/45

Date _____

Benjamin J. Rogers
1926-45-1

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HANFORD ENGINEER WORKS

STANDARD PROCEDURE FOR RECEIVING ESSENTIAL MATERIALS

Hydrated Lime, Type A - 100 Area

1. Specifications: HEW Process Specification #107

- | | |
|-------------------------------|--|
| a) Lime (CaO) | 74.0% Min. |
| b) Silica (SiO ₂) | 0.25% Max. |
| c) Aluminum & Iron Oxides | 0.50% Max. |
| d) Chlorides | 0.03% Max. |
| e) Heavy Metals (Pb) | 0.03% Max. |
| f) Fineness | 20 Mesh - 100%
100 Mesh - 99%
200 Mesh - 98% |

2. Test For:

- a) Lime (CaO)
- b) Silica (SiO₂)
- c) Aluminum & Iron oxides
- d) Chloride
- e) Heavy metals (Pb)
- f) Fineness

3. Sampling: A 16 oz. sample from each shipment shall be delivered to the Essential Material Laboratory, Building 3706.

4. Allowable Tolerance: None

E. I. du Pont de Nemours
Technical Superintendent

Approved J. J. [Signature]

Date 7/20/45

Corps of Engineers
Chief of Production

Approved [Signature]

Date 7/26/45

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HANFORD ENGINEER WORKS

STANDARD PROCEDURE FOR RECEIVING ESSENTIAL MATERIALS

Hydrated Lime, Type B - 100 Area

1. Specifications: HEW Specification # 108
 Fineness 20 Mesh - 100%
 100 Mesh - 95%
2. Test for:

 Fineness
3. Sampling: A 16 oz. sample of each shipment shall be delivered to the Essential Material Laboratory, Building 3706.
4. Remarks: This material is purchased under Contract #38 which expires 9/30/45. No specifications are entered in the Contract.
5. Allowable Tolerance: None

E. I. du Pont de Nemours
Technical Superintendent

Corps of Engineers
Chief of Production

Approved [Signature]

Approved: _____

Date 9/20/45

Date 100

[Signature]
9/20/45

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HANFORD ENGINEER WORKS

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STANDARD PROCEDURE FOR RECEIVING ESSENTIAL MATERIALS

Magnesium - 300 Area

1. Specifications: HEW Specification # 332

- a) Magnesium (Distilled)
- b) Iron • 50 ppm. Max.
- c) Manganese 50 ppm. Max.
- d) Boron 50 ppm. Max.
- e) Cadmium 50 ppm. Max.

2. Test for:

- a) Iron
- b) Manganese
- c) Boron
- d) Cadmium

3. Sampling: A 16 oz. sample of each shipment shall be delivered to the Essential Materials Laboratory, Building 3706.

4. Allowable Tolerance: None

E. I. du Pont de Nemours
Technical Superintendent

Corps of Engineers
Chief of Production

Approved *H. C. Ray*
Date *6/7/46*

Approved *Harvey E. Skinner*
Date *10 June 1946*

6/7/46

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HANFORD ENGINEER WORKSSTANDARD PROCEDURE FOR RECEIVING ESSENTIAL MATERIALSMethanol, Synthetic - 300 Area

1. Specification: HEW Specification #314

- | | |
|---------------------------|------------------------|
| a) Specific Gravity | 0.790 to 0.791 @ 25/25 |
| b) Boiling Range | 64 to 66°C |
| c) Residue on Evaporation | 0.01% Max. |
| d) Color | Water clear |
| e) Odor | Characteristic |
| f) Acidity (acetic) | 0.005% Max. |

2. Test For:

- a) Specific Gravity
- b) Boiling Range
- c) Residue on Evaporation
- d) Color
- e) Odor
- f) Acidity

3. Sampling:

A 16 oz. sample of each shipment shall be delivered to the Essential Material Laboratory, Building 3706.

4. Allowable Tolerance: None

5. Revision #1 November 1, 1946

General Electric Company
Technical Superintendent

Corps of Engineers
Chief of Production

Approved AB Greninger

Approved H. W. ...

Date 11-1-46

Date 11-6-46

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Section 29 A

HANFORD ENGINEER WORKS

STANDARD PROCEDURE FOR RECEIVING ESSENTIAL MATERIALS

Metso "99" (or equivalent) - 300 Area

1. Specifications: HEW Specification # 333
 - a) Water Insolubles 0.20% Max.
 - b) Boron 250 ppm Max.
2. Test for:
 - a) Water Insolubles
 - b) Boron
3. Sampling: A 16 oz sample of each shipment shall be delivered to the Essential Materials Laboratory, Building 3706.
4. Allowable Tolerance: None

E. I. du Pont de Nemours
Technical Superintendent

Corps of Engineers
Chief of Production

Approved [Signature]
Date 6/17/46

Approved [Signature]
Date 11/20/46

6/17/46

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STANDARD PROCEDURE FOR RECEIVING ESSENTIAL MATERIALS

Nacconal N.R. (or equivalent) - 300 Area

1. Specifications: HEW Specification # 334
 - a) Water Insolubles 0.20% Max.
 - b) Boron 50 ppm Max.
2. Test for:
 - a) Water Insolubles
 - b) Boron
3. Sampling: A 16 oz. sample of each shipment shall be delivered to the Essential Materials Laboratory, Building 3706.
4. Allowable Tolerance: None

E. I. du Pont de Nemours
Technical Superintendent

Corps of Engineers
Chief of Production

Approved [Signature]

Approved [Signature]

Date 6/7/46

Date 6/7/46

6/7/46

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HANFORD ENGINEER WORKS

STANDARD PROCEDURE FOR RECEIVING ESSENTIAL MATERIALS

Nitric Acid - 200 Area

1. Specification: Contract #2, Expires 6/1/46

- a) Nitric Acid 60% Approximately
- b) Nitric Oxides 0.05 % Max.
- c) Chlorides 0.05 % Max.
- d) Residue on Evaporation 0.02 % Max.

2. Test for:

- a) Nitric Acid
- b) Nitric Oxide
- c) Chlorides
- d) Residue on Evaporation

3. Sampling: A 16 oz. sample of each shipment shall be delivered to the appropriate 222 Laboratory Building.

4. Allowable Tolerance: Acid purchased on the above contract may vary from 59 - 63 % HNO₃. Also different strengths may be specifically indicated on individual purchase requisitions, in which case the concentration as shown by analysis should approximate that recorded on the requisition.

5. Revision #1, October 1945

E. I. du Pont de Nemours
Technical Superintendent

Corps of Engineers
Chief of Production

Approved [Signature]

Approved [Signature]

Date 10/15/45

Date 10/15/45

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HANFORD ENGINEER WORKS

STANDARD PROCEDURE FOR RECEIVING ESSENTIAL MATERIALS

Nitric Acid - 300 Area

- 1. Remarks : This material is received from the 200 Area bulk storage, and analysis is made in the 200 Area.

E. I. du Pont de Nemours
Technical Superintendent

Corps of Engineers of Engineers
Chief of Production Production

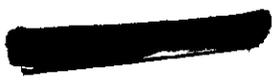
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Approved _____

Date 9/26/45

Date _____

Benjamin Royce
9/26-45



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HANFORD ENGINEER WORKS

STANDARD PROCEDURE FOR RECEIVING ESSENTIAL MATERIALS

Oxalic Acid - 100 Area

1. Specification: HEW Specification #109
 - a) Oxalic acid ($H_2C_2O_4 \cdot 2H_2O$) 99.5% Min.
 - b) Water Insolubles 0.10% Max.
2. Test for:
 - a) Oxalic acid
 - b) Water insolubles
3. Sampling: A 16 oz. sample of each shipment shall be delivered to the Essential Material Laboratory, Building 3706.
4. Allowable Tolerance: None

E. I. du Pont de Nemours
Technical Superintendent

Corps of Engineers
Chief of Production

Approved *E. I. du Pont*

Approved *Benjamin T. Rogers*

Date 9/20/45

Date 9/20/45



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HANFORD ENGINEER WORKS

STANDARD PROCEDURE FOR RECEIVING ESSENTIAL MATERIALS

Oxalic Acid - 200 Area

1. Specification: HEW Specification #11

- a) Oxalic Acid $[(COOH)_2 \cdot 2H_2O]$ 99.5% Min.
- b) Water Insolubles 0.05% Max.
- c) R_2O_3 0.05% Max.
- d) Chlorides 0.01% Max.

2. Test for:

- a) Oxalic acid
- b) Water Insolubles
- c) R_2O_3
- d) Chlorides

3. Sampling: A 16 oz. sample of each shipment shall be delivered to the Essential Material Laboratory, Building 3706.

4. Allowable Tolerance: None

E. I. du Pont de Nemours
Technical Superintendent

Corps of Engineers
Chief of Production

Approved *L. J. ...*

Approved _____

Date *9/26/45*

Date _____
Benjamin Rogues
9/26-45



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HANFORD ENGINEER WORKS

STANDARD PROCEDURE FOR RECEIVING ESSENTIAL MATERIALS

Potassium Chloride - 300 Area

1. Specification: HEW Specification #316

- a) Grade Powdered
- b) Insolubles 0.005% Max.
- c) Neutrality ACS test '41 p. 87
- d) Chlorate & Nitrate
 - ClO₃ 0.001% Max.
 - NO₃ 0.003% Max.
- e) Nitrogen Compounds (N) 0.001% Max.
- f) Phosphates 0.002% Max.
- g) Sulfates 0.006% Max.
- h) Barium ACS Test '41 p. 87
- i) Ca, Mg, & NH₄OH Precipitate 0.005% Max.
- j) Heavy Metals (Pb) ACS Test '41 p. 87
- k) Iron (Fe) " " "
- l) Sodium " " "

2. Test for:

- a) Grade
- b) Insolubles
- c) Neutrality
- d) Chlorate & Nitrate
- e) Nitrogen Compounds
- f) Phosphates
- g) Sulfates



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- h) Barium
- i) Ca, Mg, & NH₄OH Precipitate
- j) Heavy metals
- k) Iron
- l) Sodium

3. Sampling: A 16 oz. sample of each shipment shall be delivered to the Essential Material Laboratory, Building 3706.

4. Allowable Tolerance: None

E. I. du Pont de Nemours
Technical Superintendent

Approved *[Signature]*
Date 9/26/45

Corps of Engineers
Chief of Production

Approved _____
Date _____

Bayard Royce
19/26-45

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HANFORD ENGINEER WORKS

STANDARD PROCEDURE FOR RECEIVING ESSENTIAL MATERIALS

Potassium Hydroxide - 200 Area

1. Specification: Contract #40, Expires 6/30/46
"Typical Analysis" as entered in the contract:

a) KOH (Total alkalinity)	85-86.5%
b) KOH (Actual)	approximately 85%
c) K ₂ O (Total alkalinity)	70.5% Min.
d) K ₂ CO ₃	1.0%
e) KCl (As Cl)	0.019%
f) NaOH	Trace
g) Fe (guaranteed maximum)	0.005%
h) As	less than 0.05 ppm
i) Pb	Nil
j) SiO ₂	0.005%
k) SO ₃	Trace
l) NO ₃	0.05%
m) CaO + MgO	Nil
n) Ni	Trace
o) Cu	Nil
p) Ba	Nil
q) PO ₄	Nil
r) Mn	0.0002
s) Heavy Metals	0.0002 or less



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HANFORD ENGINEER WORKS

STANDARD PROCEDURE FOR RECEIVING ESSENTIAL MATERIALS

Potassium Permanganate - 200 Area

1. Specification: HEW Specification #26

- a) Potassium Permanganate 99.0% Min
- b) Water Insolubles 0.20% Max.

2. Test for:

- a) Potassium Permanganate
- b) Water Insolubles

3. Sampling: A 16 oz. sample from each shipment shall be delivered to the Essential Material Laboratory, Building 3706.

4. Allowable Tolerance: None

E. I. du Pont de Nemours
Technical Superintendent

Approved *L. Aquino*

Date *9/26/45*

Corps of Engineers
Chief of Production

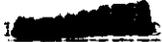
Approved _____

Date _____

Benjamin T. Rogers
9/26-45

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HANFORD ENGINEER WORKS

STANDARD PROCEDURE FOR RECEIVING ESSENTIAL MATERIALS

Phosphoric Acid - 300 Area

1. Specification: HEW Specification #317

- a) Phosphoric Acid 85%
- b) Chlorides 0.001% Max.
- c) Iron 0.005% Max.
- d) Sulfate 0.005% Max.
- e) Alkali Phosphates 0.25% Max. (As SO₄)

2. Test for:

- a) Phosphoric Acid
- b) Chlorides
- c) Iron
- d) Sulfate
- e) Alkali Phosphates

3. Sampling:

A 16 oz. sample of each shipment shall be delivered to the Essential Material Laboratory, Building 3706.

4. Allowable Tolerance: Phosphoric Acid 83.0% Min.

5. Revision #1 November 1, 1946.

General Electric Company
Technical Superintendent

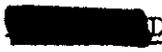
Corps of Engineers
Chief of Production

Approved A.B. Granger

Approved George Skinner

Date 11-1-46

Date 11-6-46



HANFORD ENGINEER WORKSSTANDARD PROCEDURE FOR RECEIVING ESSENTIAL MATERIALSPhosphoric Acid - 200 Area

1. Specification: HEW Specification #12

- | | |
|--|------------|
| a) Phosphoric Acid (H_3PO_4) | 75% |
| b) Chlorides (as Cl) | 0.01% Max. |
| c) Iron (as Fe) | 0.05% Max. |
| d) Material must pass following test: | |
| Dilute 10 cc. with 5 cc. of H_2O , add 0.20 cc. of 0.1 N potassium permanganate, heat to boiling, and allow to stand on the steam bath for 10 minutes. The pink color should not be entirely discharged. | |

The above specifications hold if the material is received in rubber-lined tank cars. In those cases where the material is received in stainless steel tank cars, the following specifications apply.

- | | |
|--|------------|
| a) Phosphoric Acid (H_3PO_4) | 73.8% |
| b) Chlorides (as Cl) | 0.01% Max. |
| c) Iron (As Fe) | 0.05% Max. |
| d) Material must pass following test: | |
| Dilute 10 cc. with 5 cc. of H_2O , add 0.20 cc. of 0.1 N potassium permanganate, heat to boiling, and allow to stand on the steam bath for 10 minutes. The pink color should not be entirely discharged. | |
| e) Nitric acid (HNO_3) | 1.2% |

2. Test for:

- a) Phosphoric Acid
- b) Chlorides
- c) Iron
- d) Reducing Materials
- e) Nitric acid if required.

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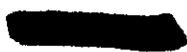
- 3. Sampling: A 16 oz. sample of each shipment shall be delivered to the appropriate 222 Building Laboratory.
- 4. Allowable Tolerances: Phosphoric Acid -0.5%
- 5. Revision #1 - November 1, 1946.

General Electric Company
Technical Superintendent

Corps of Engineers
Chief of Production

Approved *W.D. Geringer*
Date 11-1-46

Approved *Harold W. ...*
Date 11-6-46



HANFORD ENGINEER WORKS

STANDARD PROCEDURE FOR RECEIVING ESSENTIAL MATERIALS

Sodium Carbonate Type A - 100 Area

1. Specification: HEW Specification #106

- a) Sodium Carbonate 98.0% Min.
- b) Iron 0.001% Max.
- c) Water Insolubles 0.10% Max.

2. Test for:

- a) Sodium Carbonate
- b) Iron
- c) Water Insoluble

3. Sampling: A 16 oz. sample of each shipment shall be delivered to the Essential Material Laboratory, Building 3706.

4. Allowable Tolerance: None

E. I. du Pont de Nemours
Technical Superintendent

Corps of Engineers
Chief of Production

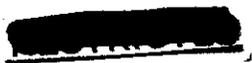
Approved *[Signature]*

Approved _____

Date 9/26/45

Date _____

Benjamin T. Royer
9/26-45



HANFORD ENGINEER WORKS

3 3177

STANDARD PROCEDURE FOR RECEIVING ESSENTIAL MATERIALS

Sodium Carbonate (Soda Ash) Type B - 100 Area

1. Specifications: Contract #16 Expires 7/31/46

"Typical analysis" as given in contract:

a) Sodium Carbonate	99.65%
b) Iron	6 ppm
c) Water insolubles	0.01%
d) $Na_2B_4O_7$	0.10%
e) Na_2O	58.15%
f) $NaCl$	0.05
g) Na_2SO_4	0.15%
h) As_2O_3	1 ppm
i) Density	45 $\frac{1}{2}$ /ft ³

2. Test for:

- a) Sodium carbonate
- b) Iron
- c) Water Insolubles

3. Sampling: A 16 oz. sample of each shipment shall be delivered to the Essential Material Laboratory, Building 3706.

4. Allowable Tolerance: Sodium Carbonate 98.0% Min
 Iron 0.001% Max.
 Water insolubles None

E. I. du Pont de Nemours
Technical Superintendent

Corps of Engineers
Chief of Production

Approved [Signature]

Approved _____

Date 7/26/45

Date _____

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HANFORD ENGINEER WORKS

STANDARD PROCEDURE FOR RECEIVING ESSENTIAL MATERIALS

Sodium Carbonate - 200 Area

1. Specification: HEW Specification #16
 - a) Total Na₂O 57.3% Min.
 - b) Water Insolubles 0.10% Max.
2. Test for:
 - a) Total Na₂O
 - b) Water Insolubles
3. Sampling: A 16 oz. sample of each shipment shall be delivered to the Essential Material Laboratory, Building 3706.
4. Allowable Tolerance: None

E. I. du Pont de Nemours
Technical Superintendent

Corps of Engineers
Chief of Production

Approved *S. Aquino*
Date *9/26/45*

Approved _____
Date _____
Benjamin T. Rogers
19/26-45-1

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HANFORD ENGINEER WORKS

STANDARD PROCEDURE FOR RECEIVING ESSENTIAL MATERIALS

Sodium Chloride (Commercial grade crushed Rock Salt)-100 & 200 Areas

1. Specification: HEW Specification #110

- a) Sodium chloride - 99.0% Min.
- b) Insoluble 0.1% Max.

2. Test for:

- a) Sodium chloride
- b) Insoluble

3. Sampling: A 16 oz. sample of each shipment shall be delivered to the Essential Material Laboratory, Building 3706.

4. Remarks: This material is purchased on Contract #7 which expires 6/30/46. While no specifications are included the average analysis of the material supplied must approximate the "typical analysis" supplied by the vendor and listed below:

- a) Sodium chloride 99.52%
- b) Water Insolubles 0.03%

Other typical constituents are as follows:

- a) Calcium sulfate 0.32%
- b) Magnesium Sulfate 0.05%
- c) Magnesium Chloride 0.08%

5. Allowable Tolerance: None

E. I. du Pont de Nemours
Technical Superintendent

Corps of Engineers
Chief of Production

Approved L. Squier

Approved _____

Date 9/26/45

Date 10/1/45

Benjamin Rogner
9/24-45

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HANFORD ENGINEER WORKS

STANDARD PROCEDURE FOR RECEIVING ESSENTIAL MATERIALS

Sodium Chloride - 300 Area

1. Specifications: HEW Specification #318

a) Grade	Powdered
b) Insolubles	0.005% Max.
c) Neutrality	ACS Test '41, p 109
d) Chlorate	0.002% Max.
e) Nitrate	0.003% Max.
f) Nitrogen Compounds (N)	0.001% Max.
g) Phosphates	0.0005% Max.
h) Sulfates	0.001% Max.
i) Ca & Mg precipitates	0.005% Max.
j) NH_4OH precipitate	ACS Test '41, p 109
k) Barium	0.001% Max.
l) Heavy Metals (Pb)	0.0005% Max.
m) Iron	0.0003% Max.
n) Potassium	0.01% Max.

2. Test for:

- a) Grade
- b) Insoluble
- c) Neutrality
- d) Chlorate
- e) Nitrate
- f) Nitrogen Compounds
- g) Phosphates

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- h) Sulfates
- i) Ca & Mg precipitates
- j) NH₄OH precipitate
- k) Barium
- l) Heavy Metals
- m) Iron
- n) Potassium

3. Sampling: A 16 oz. sample of each shipment shall be delivered to the Essential Material Laboratory, Building 3706.

4. Allowable Tolerance: None

E. I du Pont de Nemours
Technical Superintendent

Approved L. Squier

Date 9/26/45

Corps of Engineers
Chief of Production

Approved _____

Date _____

Benjamin Roy
19/26-45

[REDACTED]

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HANFORD ENGINEER WORKS

STANDARD PROCEDURE FOR RECEIVING ESSENTIAL MATERIALS

Sodium Dichromate - 100 Area

1. Specification: HEW Specification #112
 - a) Sodium dichromate ($\text{Na}_2\text{Cr}_2\text{O}_7 \cdot 2\text{H}_2\text{O}$) 98.0% Min.
 - b) Water insolubles 0.10% Max.
2. Test for:
 - a) Sodium dichromate
 - b) Water insolubles
3. Sampling: A 16 oz. sample of each shipment shall be delivered to the Essential Material Laboratory, Building 3706.
4. Allowable Tolerance: None

E. I. du Pont de Nemours
Technical Superintendent

Corps of Engineers
Chief of Production

Approved *J. J. ...*

Approved _____

Date *9/26/45*

Date _____

Benjamin T. Rogers
9/26-45

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HANFORD ENGINEER WORKS

STANDARD PROCEDURE FOR RECEIVING ESSENTIAL MATERIALS

Sodium Dichromate - 200 Area

1. Specifications: HEW Specification #17
 - a) Sodium dichromate ($\text{Na}_2\text{Cr}_2\text{O}_7$) 86.2% Min.
 - b) Sulfates 0.5% Max.
 - c) Water Insolubles 0.1% Max.
2. Test for:
 - a) Sodium dichromate
 - b) Sulfates
 - c) Water Insolubles
3. Sampling: A 16 oz. sample of each shipment shall be delivered to the Essential Material Laboratory, Building 3706.
4. Allowable Tolerance: None

E. I. du Pont de Nemours
Technical Superintendent

Approved L. D. Quinn

Date 7/26/45

Corps of Engineers
Chief of Production

Approved _____

Date _____

Benjamin R. Quinn
7/26-45



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HANFORD ENGINEER WORKS

STANDARD PROCEDURE FOR RECEIVING ESSENTIAL MATERIALS

Sodium Hydroxide - 300 Area

- 1. Remarks: This material is received from the 200 Area bulk storage and analysis is made in the 200 Area.

E. I. du Pont de Nemours
Technical Superintendent

Corps of Engineers
Chief of Production

Approved [Signature]

Approved _____

Date 9/26/45

Date _____

Benjamin T. Rogers
9/26-45

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HANFORD ENGINEER WORKS

STANDARD PROCEDURE FOR RECEIVING ESSENTIAL MATERIALS

Sodium Hydroxide, Commercial Grade Caustic Soda - 200 Area

1. Specification: Contract No. 18, Expires 6/30/46

- a) Sodium Oxide 38.9 ±1%
- b) Sodium Hydroxide 50 ±1%
- c) Sodium Carbonate 0.30% Max.
- d) Sodium Chloride 1.2% Max.
- e) Sodium Sulfate 0.08% Max.
- f) Sodium Chlorate 0.10% Max.
- g) Silica 0.01% Max.
- h) Alumina 0.005% Max.
- i) Calcium 0.005% Max.
- j) Magnesium Oxide 0.005% Max.
- k) Iron 0.003% Max.
- l) Manganese 0.0001% Max.
- m) Copper 0.0002% Max.
- n) Nickel 0.0003% Max.

2. Test for:

- a) Sodium Oxide

3. Sampling: A 16 oz. sample of each shipment shall be delivered to the appropriate 222 Building Laboratory.

4. Allowable Tolerance: None

E. I. du Pont de Nemours
Technical Superintendent

Corps of Engineers
Chief of Production

Approved L. J. [Signature]

Approved _____

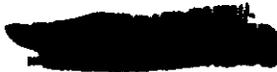
Date 9/26/45

Date 9/26-45

Benjamin Rogerson
9/26-45

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HANFORD ENGINEER WORKS

STANDARD PROCEDURE FOR RECEIVING ESSENTIAL MATERIALS

Sodium Nitrate, Commercial Grade - 200 & 300 Areas

1. Specification: HEW Specification #22

- a) Water Insolubles 0.20% Max.
- b) Total Nitrate 60.0% Min.
- c) Total Chlorides 0.5% Max.
- d) Total Sulfates 1.0% Max.

2. Test for:

- a) Water insolubles
- b) Total Nitrate
- c) Total Chloride
- d) Total Sulfates

3. Sampling: A 16 oz. sample of each shipment shall be delivered to the Essential Material Laboratory, Building 3706.

4. Allowable Tolerance: None

E. I. du Pont de Nemours
Technical Superintendent

Corps of Engineers
Chief of Production

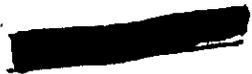
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Approved _____

Date 7/26/45

Date _____

Benjamin T. Rogers
7/26-45



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HANFORD ENGINEER WORKS

STANDARD PROCEDURE FOR RECEIVING ESSENTIAL MATERIALS

Sodium Nitrite - 200 Area

1. Specification: HEW Specification #23

- a) Sodium Nitrite, dry basis 99.00% Min.
- b) Moisture 0.30% Max.
- c) Water Insolubles 0.05% Max.
- d) Material must be free running

2. Test for:

- a) Sodium Nitrite
- b) Moisture
- c) Water Insolubles
- d) Material must be free running

3. Sampling: A 16 oz. sample of each shipment shall be delivered to the Essential Material Laboratory, Building 3706.

4. Allowable Tolerance: None

E. I. du Pont de Nemours
Technical Superintendent

Corps of Engineers
Chief of Production

Approved *S. J. Quinn*

Approved _____

Date 9/26/45

Date _____

Benjamin T. Rogers
19/26-45



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HANFORD ENGINEER WORKS

STANDARD PROCEDURE FOR RECEIVING ESSENTIAL MATERIALS

Sodium phosphate, Dibasic, Commercial Grade - 100 & 200 Areas

1. Specification: None. To be analyzed on request only.
2. Test for: Specific analysis to be decided upon at the time of the request for analysis.
3. Sampling: A 16 oz. sample shall be delivered to the Essential Material Laboratory, Building 3706 with each request for analysis.
4. Allowable Tolerance: None

E. I. du Pont de Nemours
Technical Superintendent

Corps of Engineers
Chief of Production

Approved J. [Signature]

Approved _____

Date 9/26/45

Date _____

Benjamin Royce
9/26-45

3 3177

HANFORD ENGINEER WORKS

STANDARD PROCEDURE FOR RECEIVING ESSENTIAL MATERIALS

Sodium Pyrophosphate - 300 Area

1. Specification: HEW Specification #320
 - a) Sodium pyrophosphate ($\text{Na}_4\text{P}_2\text{O}_7$) 97.5% Min.
 - b) Water Insolubles 0.20% Max.
2. Test for:
 - a) Sodium Pyrophosphate
 - b) Water Insolubles
3. Sampling: A 16 oz. sample of each shipment shall be delivered to the Essential Material Laboratory, Building 3706.
4. Allowable Tolerance: None

E. I. du Pont de Nemours
Technical Superintendent

Approved L. Quinn
Date 7/26/45

Corps of Engineers
Chief of Production

Approved _____
Date _____
Benjamin Royce
7/26-45

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HANFORD ENGINEER WORKS

STANDARD PROCEDURE FOR RECEIVING ESSENTIAL MATERIALS

Sodium Silicate Aqueous - 100 Area

1. Specification: Contract #23. Expires 10/31/45
 - a) Ratio: SiO₂/Na₂O 3.20 ± 0.5
 - b) Specific Gravity @ 60°F 41.0 ± 0.5 %
 - c) Na₂O 8.9 ± 0.2%
 - d) SiO₂ 28.5 ± 0.5%

2. Test for:

- a) Specific Gravity
- b) Na₂O
- c) SiO₂

3. Sampling: A 16 oz. sample of each shipment shall be delivered to the Essential Material Laboratory, Building 3706.

4. Allowable Tolerance: None

E. I. du Pont de Nemours
Technical Superintendent

Corps of Engineers
Chief of Production

Approved *L. Dycine*

Approved _____

Date *9/26/45*

Date _____

Benjamin T. Rogers
9/26/45

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HANFORD ENGINEER WORKS

STANDARD PROCEDURE FOR RECEIVING ESSENTIAL MATERIALS

Sodium Sulfite, Anhydrous, Commercial Grade - 100 & 200 Areas

1. Specifications: HEW Specification #114

- a) Sodium Sulfite 85.0% Min.
- b) Sodium Sulfate 15.0% Max.
- c) Water Insoluble 0.5% Max.

2. Test for:

- a) Sodium Sulfite
- b) Sodium Sulfate
- c) Water Insolubles

3. Sampling: a 16 oz. sample of each shipment shall be delivered to the Essential Material Laboratory, Building 3706.

4. Allowable Tolerance: None

E. I. du Pont de Nemours
Technical Superintendent

Approved L. Seaver

Date 7/26/45

Corps of Engineers
Chief of Station

Approved [Signature]

Date [Signature]

Benjamin Rogers
7/26-45

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HANFORD ENGINEER WORKS

STANDARD PROCEDURE FOR RECEIVING ESSENTIAL MATERIALS

Steel Sleeves - 300 Area

1. Specifications: None
2. Test for: Analyzed on special request only.
3. Sampling: If an analysis of this material is desired the Essential Materials Laboratory Supervisor, shall be consulted as to the size of the sample to be submitted.

E. I. du Pont de Nemours
Technical Superintendent

Corps of Engineers
Chief of Production

Approved L. Aquino

Approved _____

Date 9/26/45

Date Bayard R. Rogers
9/24-45

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HANFORD ENGINEER WORKS

STANDARD PROCEDURE FOR RECEIVING ESSENTIAL MATERIALS

Sulfuric Acid, Type A - 200 Area

1. Specifications: HEW Specification #20

- a) Sulfuric Acid 58-60 or 66°Be
- b) Total Iron 0.03% Max.
- c) Organic Matter 0.02% Max.
- d) Copper 0.01% Max.
- e) Lead 0.02% Max.
- f) Nitric Acid and Oxides of Nitrogen 0.01% Max.
- g) Color Clear, light amber or better

2. Test for:

- a) Sulfuric Acid
- b) Total Iron
- c) Organic Matter
- d) Nitric Acid and Oxides of Nitrogen
- e) Color

3. Sampling: A 16 oz. sample from each shipment shall be submitted to the appropriate 222 Building Laboratory.

4. Allowable Tolerance: None

5. Revision #1, November 8, 1945

E. I. du Pont de Nemours
Technical Superintendent

Corps of Engineers
Chief of Production

Approved [Signature]

Approved [Signature]

Date 11/8/45

Date 11-12-45

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HANFORD ENGINEER WORKS

STANDARD PROCEDURE FOR RECEIVING ESSENTIAL MATERIALS

J.M. Super-Cell (or other filter Aid) - 100 Area

1. Specification: HEW Specification #102

A. Particle Size

- a) Maximum particle size 80 microns
- b) 5-15% 24-40 microns
- c) 20-35% 12-24 "
- d) 28-42% 6-12 "
- e) 47% Max. Less than 6 microns
- f) 20% Min. " " " "

2. Test for:

A Particle Size

3. Sampling: A 16 oz sample of each shipment shall be delivered to the Essential Material Laboratory Building 3706.

4. Remarks: Particle size measurements are made with an Andreasen Sedimentation Pipette.

5. Allowable Tolerance: None

E. I. du Pont de Nemours
Technical Superintendent

Approved L. Squire

Date 11/26/47

Corps of Engineers
Chief of Production

Approved [Signature]

Date 9/21/47

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HANFORD ENGINEER WORKS

STANDARD PROCEDURE FOR RECEIVING ESSENTIAL MATERIALS

Tin - 300 Area

1. Specifications: HEW Specification #322

- a) Antimony 0.040% Max.
- b) Arsenic 0.050% Max.
- c) Lead 0.050% Max.
- d) Bismuth 0.015% Max.
- e) Copper 0.040% Max.
- f) Iron 0.015% Max.
- g) Silver 0.001% Max.
- h) Nickel & Cobalt 0.010% Max.
- i) Cadmium 0.001% Max.
- j) Sulfur

2. Test for:

- a) Antimony
- b) Arsenic
- c) Lead
- d) Bismuth
- e) Copper
- f) Iron
- g) Silver
- h) Nickel & Cobalt
- i) Cadmium
- j) Sulfur

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- 3. Sampling: Three ingots or bars from each shipment or lot shall be delivered to the Essential Material Laboratory, Building 3706.
- 4. Allowable Tolerance: None

E. I du Pont de Nemours
Technical Superintendent

Approved L. Aquino

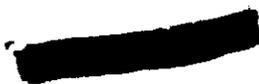
Date 9/26/45

Corps of Engineers
Chief of Production

Approved _____

Date _____

Benjamin Rogues
9/24-45





HANFORD ENGINEER WORKS

STANDARD PROCEDURE FOR RECEIVING ESSENTIAL MATERIALS

Tri - Chloro - Ethylene - 300 Area

1. Specification: HEW Specification #325

- a) Distillation range 1st drop 84.4°C Min.
95% 84.4 - 90.0°C
- b) Total alkalinity (pyridine) 0.05% Min.
- c) Residue on Evaporation 0.05% Max.
- d) Chlorides 0.01% Max.
- e) Water To pass test

2. Test for:

- a) Distillation range
- b) Total alkalinity
- c) Residue on Evaporation
- d) Chloride
- e) Water

3. Sampling:

A 16 oz. sample of each shipment shall be delivered to the Essential Material Laboratory, Building 3706.

4. Allowable Tolerance: None

5. Revision #1 November 1, 1946

General Electric Company
Technical Superintendent

Corps of Engineers
Chief of Production

Approved Al. Greninger

Approved Harvey Hain

Date 11-1-46

Date 11-1-46



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HANFORD ENGINEER WORKS

STANDARD PROCEDURE FOR RECEIVING ESSENTIAL MATERIALS

Zirconium Carbonate Gel - 200 Area

1. Specification: Contract #9, Expires 6/30/46
 - a) Zirconium Oxide 19% Min.
 - b) Chlorides 0.01% Max.
 - c) Nitric Acid Insolubles 0.30% Max.
 - d) Fluoride precipitate To pass test (Paragraph 4)
2. Test for:
 - a) Zirconium oxide
 - b) Chloride
3. Sampling: A 16 oz. sample of each shipment shall be delivered to the Essential Material Laboratory, Bldg. 3706.
4. Remarks: The fluoride test is as follows:
Heat the filtrate from the nitric acid treatment for three hours at 75°C, and add HF to make the solution 1N. Any turbidity should not exceed that obtained from the same volume of Na Cl solution (1 ml of 0.33 g. Na Cl per liter diluted to 55 ml.) when acidified with HNO₃ and treated with 1 ml of 2% Ag NO₃.
5. Allowable Tolerance: None

E. I. du Pont de Nemours
Technical Superintendent

Corps of Engineers
Chief of Production

Approved J. J. [Signature]

Approved _____

Date 9/26/45

Date _____

Benjamin Rogner
9/26-45

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