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SPECIFICATIONS AND ACCEPTANCE
PROCEDURES FOR
ESSENTIAL MATERIALS

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300 AREA
CLASSIFIED FILES

NOVEMBER 1945

(Replaces Document No. 12, September 1945)

Document consists of
66 pages, 57 of which
are in Series 1 and 71
Revised Pages.

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ISSUED TO: Yellow

LABORATORIES DIVISION, TECHNICAL DEPARTMENT

GENERAL ELECTRIC CO.

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Spec. 3-18-58

By J. E. Savely 11-25-98

Verified By PM E. C. 3-11-99

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PREFACE

This manual is prepared for the purpose of consolidating the current specifications and the procedures for the acceptance and rejection of Essential Materials purchased for use at the Hanford Works.

It is issued by the Laboratories Division of the Technical Department, and this Division is responsible for distribution and for making revisions, editing, etc.

For information with respect to the manuals, please communicate with the Chief Supervisor, Laboratories Division, Technical Building, 300 Area.

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November, 1947

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PROCEDURE FOR REVISION OF MANUAL

In order that a positive control may be kept upon this manual, only the Laboratories Division shall be empowered to issue revisions or corrections.

However, any recognized group may request a revision or addition of any kind. Such requests should be sent to the interested Operating Department Superintendent, the Technical Superintendent, and to the Chief Supervisor of the Laboratories Division.

The copy sent to the Laboratories Division shall be used for approval signatures of the two Superintendents and shall be the authority for the issue of revisions. No change in existing specifications shall be made without this dual approval.

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PROCEDURE FOR REPORTING ACCEPTANCE ANALYSES

The original individual analytical reports are filed in the Laboratories Division Office, 300 Area.

A periodic summary of analyses on Essential Materials shall 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	Atomic Energy Commission
1	Purchasing - Essential Materials
2	Accounts Payable
1	Asst. Technical Superintendent
1	Laboratory File
1	700 File
1	300 File
1	Pink Copy
1	Yellow Copy

Other copies are distributed to the departments concerned according to their request.

This summary shows that the materials comply with specifications or that the specification has been waived in each individual case.

In the case of a waiver, the item will be explained in a footnote.

Where Essential Materials do not meet specification requirements, one of two procedures will be followed:

- A. In instances of minor deviations, the specifications can be waived as explained on Page V. In this case, the materials will be reported as above.
- B. In those instances in which the specifications are not waived, the material will be reported on a separate summary with the statement that rejection procedures should be instituted as outlined on Page VI.

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PROCEDURE FOR OUT OF SPECIFICATION MATERIALS

If any material fails to meet specifications, the Laboratories Division will notify the office of the Superintendent of the consuming operation and the Assistant Technical Superintendent concerned. The material will not be used unless there is dual approval of the waiver by these two offices.

WAIVERS

When a material is out of specifications but is to be used, the procedure for obtaining a waiver is as follows:

First, the waiver can be obtained verbally from the two offices named above or from their delegated representative. This oral agreement will materially expedite the acceptance of the material since it can be reported on this basis.

Secondly, a written waiver shall be circulated for signed approval. This form (HW 5.1 revised) shall be made out in triplicate and shall carry details of the verbal waiver as well as the analysis and specification of the material in question.

All three copies of the waiver shall be forwarded to the Superintendent of the consuming department (or his delegated representative) for signature. The first copy is retained by his office and the second and third copies are sent to the interested Assistant Technical Superintendent. He, in turn, signs both copies and retains the second copy, sending the third copy to the Chief Supervisor of the Laboratories Division for incorporation in the permanent files.

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REJECTION

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If it is decided that a material cannot be used in the process, a separate sample summary will be issued making this statement and reporting this analysis only.

The authority to reject materials lies with either or both of the Superintendents concerned and not with the Laboratories Division. Consequently, the memorandum requesting rejection by the Purchasing Division is to be initiated by the office of the Operating Department Superintendent.

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November, 1947

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EW 5.1 (Revised)

EW-813

Date _____

Routing Instructions:

To _____ retain copy _____ and forward copies _____

To _____ retain copy _____ and forward copy _____

To _____ and forward to Laboratory Files.

SUBJECT: ESSENTIAL MATERIAL SPECIFICATIONS WAIVER

The following Essential Materials do not meet specifications as indicated. However, a verbal agreement to use the material has been obtained from the following:

<u>Name</u>	<u>Department</u>	<u>Date</u>	<u>Initialed</u>
-------------	-------------------	-------------	------------------

Will you please confirm this waiver by signing in the space provided so that the material may be released for use. A copy of this agreement is supplied for your office files as shown.

<u>Material</u>	<u>EW No.</u>	<u>Area</u>	<u>Lab. No.</u>	<u>Date Rec.</u>	<u>Constituent</u>	<u>Analysis</u>	<u>Spec.</u>
-----------------	---------------	-------------	-----------------	------------------	--------------------	-----------------	--------------

Laboratories Division, Technical Dept.
By: _____

Acceptance Signatures:

Operating Department

Technical Department

VII

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EXPLANATION OF THE MATERIAL SHEETS

Below is a brief explanation of the terms used in the individual specification sheets:

1. HW Material Numbers

These numbers are assigned by the Laboratories Division and are merely for convenience in referring to a particular material. Where blanks occur, materials have been deleted from the manual due to changes in requirements.

2. Purchase Specifications

The specifications given herein are those applied by the Purchasing Division at the date of writing and are subject to change according to the procedure for revisions.

3. Tests

The constituents listed under this heading are those which are actually checked by analysis and do not necessarily coincide exactly with the specifications. These tests are subject to change as experience dictates.

4. Sampling

All Essential Materials are sampled by a representative of the consuming department. The Laboratories Division shall supply any necessary containers. Sampling shall be done in accordance with the procedures set forth in the manual entitled "Sampling Methods and Sample Summaries".

5. Allowable Tolerance

The values given under this heading are those which, at this writing, indicate a material that can be used without difficulty and are normally less stringent than the purchase specifications. Material below specifications but within the tolerance can be accepted without waiver.

These values are for plant use only and they can be varied as experience indicates according to the revision procedures.

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ACENAPTHENE

HW Material Number 301

1. Purchase Specifications

a) Melting point 92.5 - 95.00° C

2. Test for

- a) Melting point
- b) Solubility in chloroform

3. Sampling: An 8 oz. sample of each shipment shall be delivered to the General Chemical Laboratory, Technical Building, 300 Area.

4. Allowable Tolerance: None

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Hanford Works

Approved [Signature]

Date Nov 4, 1947

U. S. Atomic Energy Commission
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Approved [Signature]

Date Nov 11, 1947

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ALUM

HW Material Number 103

1. Purchase Specifications

a) Commercial grade alum

2. Test for

a) Aluminum sulfate, water soluble reported as Al_2O_3 .

3. Sampling: A 16 oz. sample of each shipment shall be delivered to the General Chemical Laboratory, Technical Building, 300 Area.

4. Allowable Tolerance:

a) Al_2O_3

17% Min.

General Electric Company
Hanford Works

Approved *W. B. Springer*

Date *Nov 4 1947*

U. S. Atomic Energy Commission
Office of Hanford Directed Operations

Approved *Donald S. Stinger*

Date *Nov 4 1947*

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ALUMINUM

HW Material Number 302

(Includes ingots, bars, caps, cans, etc.)

1. Purchase Specifications

a) The material shall be 2S aluminum.

2. Test for

a) Copper

b) Iron

c) Acid Insolubles (Reported as Si)

d) The material shall be analyzed spectrochemically to determine any other important impurity.

3. Sampling: Three pieces, whether ingots, bars, caps, cans, etc., from each shipment or lot shall be delivered to the General Chemical Laboratory, Technical Building, 300 Area.

4. Allowable tolerance: The sum of the iron, copper, and acid insoluble analyses shall not exceed 0.95%.

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ALUMINUM DUMMIES

HW Material Number 117

1. Purchase Specifications

a) The material shall be 2S aluminum.

2. Test for

a) Iron

3. Sampling: Three aluminum dummies from each shipment or lot shall be delivered to the General Chemical Laboratory, Technical Building, 300 Area.

4. Allowable Tolerance: Iron 0.85% Maximum

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ALUMINUM - SILICON

HW Material Number 306

1. Purchase Specifications

- a) Silicon 11.5 ± 12.5%
- b) Copper 0.10% Max
- c) Iron 0.50% Max

2. Test for

- a) Silicon
- b) Copper
- c) Iron

3. Sampling: Three ingots or bars from each shipment shall be delivered to the General Chemical Laboratory, Technical Building, 30C Area.

4. Allowable Tolerance: None

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Date 10/1/57

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Date 10/1/57

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AMMONIUM SILICO FLUORIDE
(Ammonium Fluosilicate)

HW Material Number 28

1. Purchase Specifications

- a) Ammonium Silico Fluoride 98.5% 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 General Chemical Laboratory, Technical Building, 300 Area.

4. Allowable Tolerance: None

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AMMONIUM SULFATE

HW Material Number 29

1. Purchase Specifications

- a) Ammonium Sulfate 98.5% Min.
- b) Water Insolubles 0.05% Max.

2. Test for:

- a) Ammonium Sulfate
- b) Water Insolubles

3. Sampling: A 16 oz. sample of each shipment shall be delivered to the General Chemical Laboratory, Technical Building, 300 Area.

4. Allowable Tolerance: None

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Date Feb 4, 1947

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Date Feb 4, 1947

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AMMONIUM SULFITE

HW Material Number 30

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1. Purchase Specifications

- a) Ammonium Sulfite $[(NH_4)_2SO_3 \cdot H_2O]$ 90% Min.
b) Water Insolubles 0.05% Max.

2. Test for:

- a) Ammonium Sulfite
b) Water Insolubles

3. Sampling: A 16 oz. sample of each shipment shall be delivered to the General Chemical Laboratory, Technical Building, 300 Area.

4. Allowable Tolerance: None

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ARGON

HW Material Number 307

1. Purchase Specifications

c) Purity 99.6 or 99.8%

2. Test for:

a) Must pass "use" test as applied by Production Department.

3. Sampling: Not sampled

4. allowable Tolerance: None

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ARGON

Material Number 33

1. Purchase Specifications

- a) Incandescent Grade
- b) Oxygen Nil
- c) Argon 99.5% Min.

2. Test for:

- a) Oxygen

3. Sampling: A sample of each gas shipment shall be delivered to the General Chemical Laboratory, Technical Building, 300 Area.

4. Tolerances: None

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AB [Signature]

Date

6-27-49

U. S. Atomic Energy Commission
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Approved

[Signature]

Date

6-28-49

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BARIUM CHLORIDE

HW Material Number 308

1. Purchase Specifications

- | | |
|------------------------------------|--------------------------|
| a) Insolubles | 0.01% Max. |
| b) Alkali Salts as SO_4 | 0.050% Max. |
| c) Strontium and Calcium Chlorides | 0.10% Max. |
| d) Nitrate and Chlorate | 0.005% as NO_3 |
| e) Heavy Metals | 0.0005% Pb
0.0002% Fe |

2. Test for

- | | |
|----------------------------------|------------------|
| a) Insolubles | |
| b) Alkali Salts as SO_4 | |
| c) Strontium & Calcium Chlorides | |
| d) Nitrate & Chlorate | ACS test '41 p35 |
| e) Heavy Metals | ACS test '41 p35 |
| f) Water | |

3. Sampling: A 16 oz. sample of each shipment shall be delivered to the General Chemical Laboratory, Technical Building, 300 Area.

4. Allowable Tolerance: None

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Date 4/14/50

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BISMUTH

HW Material Number 32

1. Purchase Specifications

- | | |
|---------------------------|-------------|
| a) Bismuth. | 99.5 % Min. |
| b) Nitric Acid Insolubles | 0.10% Max. |
| c) Iron | 0.10% Max. |
| d) Sulfur | 0.10% Max. |

e) Form

To be ingots, bars or pieces thereof, approximate weight - six pounds.
Powdered form is not acceptable.

2. Test for

- a) Bismuth
- b) Nitric Acid Insolubles
- c) Iron
- d) Sulfur

3. Sampling: Three ingots, bars or pieces thereof from each shipment or lot shall be delivered to the General Chemical Laboratory, Technical Building, 300 Area.

4. Allowable Tolerance: - None

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RB Greener

Date Mar 16 1948

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Office of Hanford Directed Operations

Approved

Donald E. Stinger

Date Mar 16 1948

10-A

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Historical Number 2

1. Purchase Specifications

- | | |
|----------------------------|------------------|
| a) Bi_2O_3 | 79% Min. |
| b) Chlorides | 0.05% Max. as Cl |
| c) Nitric Acid Insolubles | 0.1% Max. |

2. Test for

- a) Bi_2O_3
- b) Chlorides
- c) Nitric Acid Insolubles

3. Sampling: A 16 oz. sample of each shipment shall be delivered to the General Chemical Laboratory, Technical Building, 300 Area.

4. allowable Tolerance: None

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Date 5-4-57

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BROMOBENZENE

HW Material Number 34

1. Purchase Specifications:

- a) Commercial grade
- b) Specific Gravity 1.495 20/4°C Max.
- c) Color Water Clear

2. Test for:

- a) Specific Gravity
- b) Boiling range
- c) Color

3. Sampling: A 10 oz. sample of each shipment shall be delivered to the General Chemical Laboratory, Technical Building, 300 Area.

4. Allowable tolerance: None

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Hanford Works

Approved

Date

AB. [Signature]
Sept 3, 1949

U. S. Atomic Energy Commission
Hanford Operations Office

Approved

Date

[Signature]
Oct 3, 1949

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BRONZE

HW Material Number 309

1. Purchase Specifications

- a) Copper 45-49% by weight
- b) Tin 51-55% by weight

2. Test for:

- a) Copper

3. Sampling: Three ingots or bars from each heat received shall be delivered to the General Chemical Laboratory, Technical Building, 300 Area.

4. Allowable Tolerance: None

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Approved W. L. Feninger

Date Mar 4 1947

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Office of Hanford Directed Operations

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c. s.

CALCIUM

HW Material Number 35

1. Purchase Specifications:

a)	Li	1 ppm, Max.
b)	Be	5 ppm, Max.
c)	B	L 0.5 ppm
d)	Na	5 ppm, Max
e)	Mg	1000 ppm, Max.
f)	Al	L 5 ppm,
g)	Si	5 ppm, Max
h)	Mn	10 ppm, Max.
i)	Fe	10 ppm, Max.
j)	Cu	5 ppm, Max.
k)	Cr	L 5 ppm
l)	Co	L 5 ppm
m)	Ni	L 5 ppm
n)	N	370 ppm, Max.

2. Test for:

- a) Assay
- b) Oil or grease
- c) Li
- d) Be
- e) B
- f) Na
- g) Mg
- h) Al
- i) Si
- j) Mn
- k) Cu
- l) Cr
- m) Co
- n) Ni
- o) N
- p) Cl
- q) C
- r) Fe
- s) Trial reduction with uranium tetrafluoride on a 500 g. scale, see report LA-472. The metal button is then analyzed for the following elements: C, Li, Be, B, Mg, Al, Si, P, Ca, V, Cr, Mn, Fe, Co, Ni, Cu, Mo, Ag, Cd, In, Sn, Pt, Au, Hg, Pb and Bi.

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3. Sampling: A 1/2 oz. sample of each shipment will be delivered to the General Chemical Laboratory, Technical Building, 100 Area
- a) The metal button, uranium tetrafluoride and calcium metal involved in the trial reduction are submitted to the General Chemical Laboratory for analysis.
4. Allowable Tolerance: None
5. Revision Date: January 25, 1950

General Electric Company
Hanford Works

Approved [Signature]

Date 1/26/1950

U. S. Atomic Energy Commission
Hanford Operations Office

Approved

Date

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CALCIUM CHLORIDE
(Anhydrous)

HW Material Number 331

1. Purchase Specifications

- | | |
|---------------------|------------|
| 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 General Chemical Laboratory, Technical Building, 300 .roc.

4. Allowable Tolerance: None

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124-1

CALCIUM CHLORIDE
(Refrigerant)

Material Number 336

1. Purchase Specifications
 - a) Commercial grade
2. Test for:
 - a) Material analyzed on request only.
3. Sampling: A 8 oz. sample shall be forwarded to the General Chemical Laboratory, Technical Building, 300uron.
4. allowable Tolerance: None

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CALCON

Hi Material Number 337

1. Purchase Specifications

a) Purchased by trade name only

2. Test For:

a) Analyzed on special request only

3. Sampling: A 16 oz. sample shall be forwarded to the General Chemical Laboratory, Technical Building, 300 area.

4. allowable tolerance: None

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Approved [Signature]

Approved [Signature]

Date Nov 4 1947

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CALOL

HW Material Number 338

1. Purchase Specifications
 - a) Purchased by trade name only
2. Test for:
 - a) Analyzed on special request only
3. Sampling: An 8 oz. bottle shall be forwarded to the General Chemical Laboratory, Technical Building, 300 area.
4. allowable Tolerance: None

General Electric Company
Hanford Works

approved L. B. Lanning

Date Nov 4 1947

U. S. Atomic Energy Commission
Office of Hanford Directed Operations

approved W. A. R. R. R.

Date Nov 4 1947

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CARBON DIOXIDE

HW Material Number 120

1. Purchase Specifications

a) Commercial Grade 99.5% Min.

2. Test for:

a) Field Tests - Bottled Carbon Dioxide

Each cylinder to be tested for odor, snow and vapor pressure vs. temperature according to "P" Division 100 Area Standard Operating Procedure, Section V, 1-E-1.

b) Laboratory Tests

1) CO₂

2) O₂

3) CO

4) H₂

5) Other impurities by Infra Red Analysis.

3. Sampling:

a) A composite sample of each bulk shipment, i.e., tanker shipments, will be delivered to the General Chemical Laboratory, Technical Building, 300 Area.

b) Two samples per week will be taken from the CO₂ manifold in each area where CO₂ is received in 50 lb. cylinders and delivered to the General Chemical Laboratory, Technical Building, 300 Area.

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4. Allowable Tolerance

a) CO ₂	99.0% Min.
b) O ₂	0.2% Max.
c) N ₂	0.8% Max. (4x%O ₂)
d) CO	0.2% Max.
e) H ₂	0.2% Max.
f) Other Impurities	Trace Max.

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Hanford Works
Approved [Signature]

Date 8-22-50

U. S. Atomic Energy Commission
Hanford Operations Office
Approved [Signature]

Date 8-22-50

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HW-61d3

CARBON TETRACHLORIDE

HW Material Number 310

1. Purchase Specifications

- | | |
|-----------------------------|---|
| a) Boiling range at 760 mm. | 75.0° - 77.5° C |
| 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 General Chemical Laboratory, Technical Building, 300 Area.

4. Allowable Tolerance:

- | | |
|------------------|--------------|
| a) Boiling range | 73.0° C Lin. |
|------------------|--------------|

General Electric Company
Hanford Works

Approved *W. L. Gunning*

Date *Nov 4, 1947*

U. S. Atomic Energy Commission
Office of Hanford Directed Operations

Approved *W. L. Gunning*

Date *Nov 4, 1947*

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HW-4133

CERIC AMMONIUM NITRATE

HW Material Number 3

1. Purchase Specifications

- | | |
|---------------------------|------------------------|
| a) Ceric Ammonium Nitrate | 90.0% Min. (Dry Basis) |
| 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
- d) Water

3. Sampling: A 16 oz. sample of each shipment shall be delivered to the General Chemical Laboratory, Technical Building, 300 Area.

4. Allowable Tolerance: None

General Electric Company
Hanford Works

Approved W. B. Greninger

Date Nov 4 1947

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Office of Hanford Directed Operations

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Date Nov 4 1947

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HW-2143

CHLORINE

HW Material Number 104

1. Purchase Specifications
 - a) Commercial grade
2. Test for:
 - a) To be analyzed on request only.
3. Sampling: Due to the safety hazards involved no routine samples are taken.
4. Allowable Tolerance:
 - a) Chlorine 99.9% Min.

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Approved *J. J. Pennington*

Date *Nov 4, 1947*

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Approved *W. H. S. Hingee*

Date *Nov 11, 1947*

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HW-4110

COPPER

HW Material Number 311

1. Purchase Specifications

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 General Chemical Laboratory, Technical Building, 300 Area.

4. allowable Tolerance: None

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EW-1103

COAL

(Plant)

1. Purchase 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 twentieth 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 samples an 8 oz. sealed bottle of 60 mesh coal and a five pound "as received" sample shall be delivered to the General Chemical Laboratory, Technical Building, 300 Area.

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.

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Date Nov 4, 1947

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Date Nov 4, 1947

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12W-5173

COAL

(Village)

1. Purchase 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 twentieth car or once a week, whichever is less frequent, and shall be delivered to the General Chemical Laboratory, Technical Building, 300 Area.

Increments of one shovelful each shall be taken at equidistant points around the circumference of the pile about midway from the top to the bottom until ten shovelfuls have been separated. Three large lumps shall be added to this amount and the entire quantity reduced to $\frac{1}{2}$ " 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.

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Date Nov 4 1947

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HW-8193

DUMMY BLOCKS

HW Material Number 340

1. Purchase Specifications

- a) Dimension specifications only

2. Test for:

- a) To be analyzed only, on special request.

3. Sampling:

- a) A sample shall be sent with each request for analysis to the General Chemical Laboratory, Technical Building, 300 Area.

General Electric Company
Hanford Works

Approved *W. L. Geringer*

Date *Nov 4 1947*

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Approved *W. L. Geringer*

Date *Nov 4 1947*

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HW-8186

DUPONOL, M3 DRY

HW Material Number 335

1. Purchase Specifications: None
2. Test for: Material analyzed on request only.
3. Sampling: A 16 oz. sample shall be delivered to the General Chemical Laboratory, Technical Building, 300 Area.
4. Remarks:
 - a) Tests are run on this material for identification purposes only.

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HW-8183

FERRIC SULFATE

HW Material Number 118

1. Purchase Specifications

- | | | |
|----|------------------------------|-----------|
| a) | $\text{Fe}_2(\text{SO}_4)_3$ | 68% Min. |
| b) | FeSO_4 | 1% Max. |
| c) | Chlorides | 1.5% Max. |
| d) | Sulfate, other than iron | 4.0% Max. |
| e) | Al_2O_3 | 0.5% Max. |

2. Test for:

- a) Water soluble ferric sulfate $\text{Fe}_2(\text{SO}_4)_3$

3. Sampling:

- a) A 16 oz. sample of each shipment shall be delivered to the General Chemical Laboratory, Technical Building, 300 Area.

4. Allowable Tolerance: None

5. Revision date: June 15, 1949

General Electric Company
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Hanford Operations Office

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HW-113

FERROUS AMMONIUM SULFATE

HW Material Number 4

1. Purchase Specifications

- | | |
|--|------------|
| a) $\text{Fe}(\text{NH}_4)_2(\text{SO}_4)_2 \cdot 6\text{H}_2\text{O}$ | 98.0% 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 General Chemical Laboratory, Technical Building, 300 Area.

4. Allowable Tolerance: None

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100-11187

FILTER AIDS

HW Material Number 102

1. Purchase Specifications

- a) These materials are purchased by trade names and are analyzed on request only.

2. Test for:

- a) Upon request, these materials will be analyzed for particle size.

3. Sampling: A 16 oz. sample of the shipment shall accompany each request for analysis and shall be delivered to the General Chemical Laboratory, Technical Building, 300 area.

General Electric Company
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Approved W. B. Geringer

Date Nov 4 1947

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Office of Hanford Directed Operations

Approved W. B. Geringer

Date Nov 4 1947

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HW-8183

FLUOSILICIC ACID

HW Material Number 312

1. Purchase Specifications

a) Grade CP or reagent grade

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 General Chemical Laboratory, Technical Building, 30C Area.

4. Allowable Tolerance:

a) H_2SiF_6 20% Min.

b) Non Volatile 0.25% Max.

c) Chloride 0.02% Max.

d) Sulfates 0.05% Max.

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Date 7-14-54

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Date 7-14-54

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HW-8183

GRAPHITE

HW Material Number 339

1. Purchase Specifications

a) Dixon number 2.

2. Test for: Analyzed on request only

3. Sampling: An 8 oz. sample shall be delivered with each request for analysis to the General Chemical Laboratory, Technical Building, 300 Area.

General Electric Company
Hanford Works

Approved J. D. Geringer

Date Nov 4, 1947

U. S. Atomic Energy Commission
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Approved Donald G. Stinger

Date Nov 4, 1947

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HW-8183

NELIUM

HW Material Number 36

1. Purchase Specifications

a) Purified Grade

99.5% Min.

2. Test for:

- a) Density
- b) CO₂
- c) O₂
- d) H₂
- e) N₂
- f) Water

3. Sampling: A sample of each gas shipment shall be delivered to the General Chemical Laboratory, Technical Building, 300 Area.

4. Tolerance: None

General Electric Company
Hanford Works

U. S. Atomic Energy Commission
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Approved

AB Geringer

Approved

Donald J. Loring

Date

6-27-49

Date

6-28-49

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HYDROFLUORIC ACID
(6%)

HW Material Number 313

1. Purchase Specifications: None
2. Test for:
 - a) Material analyzed on request only.
3. Sampling: An 8 oz. sample shall be delivered to the General Chemical Laboratory, Technical Building, 300 Area, with each request for analysis. Sample should be sent in a hard rubber bottle.

General Electric Company
Hanford Works

Approved OB. G. G. G.

Date Nov 4 1947

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Approved W. J. G. G.

Date 11, 1947

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HP-8183

HYDROGEN

HW Material Number 38

1. Purchase Specifications

a) Commercial Grade

99.5% Min.

2. Test for:

a) Oxygen

b) Water

3. Sampling: A sample of each gas shipment shall be delivered to the General Chemical Laboratory, Technical Building, 300 Area.

4. Tolerances: None

General Electric Company
Hanford Works

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Office of Hanford Directed Operations

Approved CB. Henniger

Approved Edward J. Hill

Date 6-27-49

Date 6-28-49

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HW-8153

HYDROGEN FLUORIDE

HW Material Number 6

1. Purchase Specifications
 - a) Double Distilled, Anhydrous HF
2. Test for:
 - a) Not analyzed
3. Sampling: Due to the safety hazards involved, no samples are taken.

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Date 1/14/47

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Date 1/14/47

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C.57

HYDROGEN FLUORIDE

HW Material Number 39

1. Purchase Specifications

- | | |
|--|-------------|
| a) Anhydrous HF | 99.7% Min. |
| b) Water | 0.25% Max. |
| c) Fluosilicic Acid | 0.04% Max. |
| d) Sulfuric Acid | 0.04% Max. |
| e) Sulfur Dioxide | 0.072% Max. |
| f) Vendor's analysis of each lot of material supplied must be forwarded at time of shipment. | |

2. Test for:

- a) HF
- b) Fluosilicic Acid
- c) Sulfuric Acid
- d) Sulfur Dioxide
- e) Water

3. Sampling: Due to the safety hazards involved, samples will be submitted on special requests only. If samples are to be taken, a 40 gram sample placed in a special sample bomb shall be delivered to the General Chemical Laboratory, Technical Building, 300 Area.

4. Allowable tolerance: None

5. Revision Date: August 1, 1950

General Electric Company
Hanford Works

Approved

O. H. Granger

Date

8-23-50

U.S. Atomic Energy Commission
Hanford Operations Office

Approved

I. L. Lind

Date

8-23-50

-31A-

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HW-8183

HYDROGEN PEROXIDE

HW Material Number 24

1. Purchase Specifications

- | | |
|----------------------|------------|
| 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 of each shipment shall be delivered to the 231 Building Laboratory.

4. Allowable Tolerance: None

General Electric Company
Hanford Works

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Date

W. J. Greninger
Nov 4, 1947

U. S. Atomic Energy Commission
Office of Hanford Directed Operations

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Date

Donald J. Turner
Nov 4, 1947

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H"-8183

IODINE

HW Material Number 44

1. Purchase Specifications

- a) Sublimed Iodine
- b) Non-volatile matter 0.020% Max.
- c) Chlorine and Bromine (as Cl) To pass test*

*Refer to Specifications for Analytical Reagents, American Chemical Society, 1941.

2. Test for:

- a) Chlorine and Bromine
- b) Non-volatile matter

3. Sampling: A 10 oz. sample of each shipment shall be delivered to the General Chemical Laboratory, Technical Building, 300 Area.

4. Allowable tolerance: None

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HW-5125

LANTHANUM AMMONIUM NITRATE

HW Material Number 7

1. Purchase Specifications

- | | |
|----------------------------------|------------|
| a) Lanthanum | 23.0% Min. |
| b) Nitric Acid Insolubles (800C) | 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 General Chemical Laboratory, Technical Building, 300 Area.

4. Allowable Tolerance: None

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HW-9185

LIME, Hydrated

HW Material Number 108

1. Purchase Specifications

a) Commercial Grade

2. Test for:

a) Available lime as CaO

b) Fineness to pass 20 mesh
Fineness to pass 100 mesh

3. Sampling: A 16 oz. sample of each shipment shall be delivered to the General Chemical Laboratory, Technical Building, 300 Area.

General Electric Company
Hanford Works

Approved

RD Geringer

Date Nov 4 1947

U. S. Atomic Energy Commission
Office of Hanford Directed Operations

Approved

Ronald E. Stinner

Date Nov. 4, 1947

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HW-51813

MAGNESIUM

HW Material Number 332

1. Purchase Specifications

- | | |
|--------------|--------------|
| a) Magnesium | (Distilled) |
| b) Iron | 50 ppm. Max. |
| c) Manganese | 50 ppm. Max. |
| d) Boron | 50 ppm. Max. |
| e) Cadmium | 50 ppm. Max. |
| f) Nitrogen | 75 ppm. Max. |

2. Test for:

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

3. Sampling: A 16 oz. sample of each shipment shall be delivered to the General Chemical Laboratory, Technical Building, 300 Area.

4. Allowable Tolerance: None

General Electric Company
Hanford Works

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Date

W. B. Geringer
Nov 4, 1947

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Office of Hanford Directed Operations

Approved

Date

Donald S. Stanger
Dec 11, 1947

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HT-8183

MAGNESIUM OXIDE

HT Material Number 40

1. Purchase Specifications:

- a) Electrically fused
- b) SiO_2 2.0% Max.
- c) B 0.010% Max.
- d) BeO 0.010% Max.
- e) R_2O_3 0.50% Max.
- f) Other elements as low as commercially feasible subject to individual approval on presentation of typical complete analysis and process testing.
- g) A specific grain size range will be indicated on individual purchase requisitions.

2. Test for:

- a) SiO_2
- b) B
- c) Be
- d) R_2O_3
- e) CaO
- f) Li
- g) Na
- h) Al
- i) K
- j) Fe
- k) Sieve analysis

3. Sampling: A 10 oz. sample of each shipment shall be delivered to the General Chemical Laboratory, Technical Building, 300 Area.

4. Allowable tolerance: None

General Electric Company
Hanford Works

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W. B. Heninger
6-27-49

Date

U. S. Atomic Energy Commission
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Approved

Donald J. Sturges
6-28-49

Date

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HW-5125

MANGANOUS SULFATE

HW Material Number 8

1. Purchase Specifications

- | | |
|-------------------------------------|--------------------|
| a) Aqueous solution of $Mn(NO_3)_2$ | 50.0% $Mn(NO_3)_2$ |
| b) Chlorides | 0.02% Max. as Cl |
| c) R_2O_3 | 0.05% Max. |

2. Test for:

- a) Assay
- b) Chlorides
- c) R_2O_3

3. Sampling: A 16 oz. sample of each shipment shall be delivered to the General Chemical Laboratory, Technical Building, 300 Area.

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Hanford Works

Approved *W. J. Geringer*

Date *Nov 4, 1947*

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Approved *W. J. Geringer*

Date *1. 17. 4. 1947*

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EW-8183

METHANOL

(Synthetic)

HW Material Number 314

1. Purchase Specifications

- | | |
|---------------------------|-------------------------|
| a) Specific Gravity | 0.7962 at 15/4° C. Max. |
| 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 General Chemical Laboratory, Technical Building, 300 Area.

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[Signature]
Nov 4, 1947

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Dec 2, 1947

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HW-4183

METSO "99"
(or equivalent)

HW Material Number 333

1. Purchase Specifications

- 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 General Chemical Laboratory, Technical Building, 300 Area.

4. Allowable Tolerance: None

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HW-8124

NACCONAL N.R.

(or equivalent)

Hi Material Number 334

1. Purchase Specifications

- 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 General Chemical Laboratory, Technical Building, 300 Area.

4. Allowable Tolerance: None

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Date

J. Heringer

Nov 4, 1947

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Office of Hanford Directed Operations

Approved

Date

Thomas G. Stanger

Nov 4, 1947

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HW-4115

NITRIC ACID

HW Material Number 10

1. Purchase Specifications

- | | |
|---------------------------|-------------------|
| 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 Oxides
- 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 Tolerances: Acid purchased on the above specification may vary from 59 - 63% HNO_3 . 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.

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Approved [Signature]

Date Nov 4 1947

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Approved Donald G. Sturges

Date Nov 4, 1947

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HW-8183

NITRIC ACID

HW Material Number 41

1. Purchase Specifications:

a) Appearance	colorless and free from suspended matter or sediment
b) Strength	68-70% by weight of HNO_3
c) Non-volatile matter	0.0005% Max.
d) SO_4	0.0002% Max.
e) Cl	0.00007% Max.*
f) As	0.000003% Max.
g) Fe	0.0001% Max.
h) Heavy Metals (as Pb)	0.0005% Max.

*Refer to Specifications for Analytical Reagents, American Chemical Society, 1941.

2. Test for:

a) Assay	h) Li
b) Nitric oxide	i) Ba
c) Cl	j) B
d) SO_4	k) Na
e) As	l) Hg
f) Fe	m) Al
g) Heavy Metals (Pb)	n) Si
	o) Residue on evaporation

3. Sampling: A 10 oz. sample of each shipment shall be delivered to the General Chemical Laboratory, Technical Building, 300 Area.

4. Allowable tolerance: None

General Electric Company
Hanford Works

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Date

AB Geringer
6-27-49

U. S. Atomic Energy Commission
Office of Hanford Directed Operations

Approved

Date

James L. Stinger
6-28-49

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HW-8183

NITROGEN

HW Material Number 45

1. Purchase Specifications:

- a) Commercial Grade, oil pumped
- b) Oxygen 0.3% Max.
- c) Water 0.03% Max.
- d) Nitrogen 99.5% Min.

2. Test for:

- a) Oxygen
- b) Water
- c) Carbon Dioxide

3. A sample of each gas shipment shall be delivered to the General Chemical Laboratory, Technical Building, 300 Area.

4. Allowable Tolerance: None

General Electric Company
Hanford Works

Approved

J. B. Harington

Date

Jan 26 1950

U. S. Atomic Energy Commission
Hanford Operations Office

Approved

Donald G. Stange

Date

Jan 26 1950

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HW-8123

OXALIC ACID

HW Material Number 11

1. Purchase Specifications

- | | |
|--|------------|
| a) Oxalic Acid $(\text{COOH})_2 \cdot 2\text{H}_2\text{O}$ | 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 General Chemical Laboratory, Technical Building, 300 Area.

4. Allowable Tolerance: None

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Hanford Works

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Date

R. G. Geringer
Nov 4, 1947

U. S. Atomic Energy Commission
Office of Hanford Directed Operations

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Date

W. M. G. Geringer
Nov 4, 1947

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HW-8183

OXALIC ACID

HW Material Number 42

1. Purchase Specifications:

a) Crystalline $H_2C_2O_4 \cdot 2H_2O$	
b) Chloride	0.002% Max.
c) Fe	To pass test*
d) Heavy Metals (as Pb)	To pass test*
e) Insoluble Matter	0.010% Max.
f) Nitrogen Compounds	0.001% Max.
g) Non-volatile Matter	0.020% Max.
h) SO_4	0.003% Max.
i) Substances darkened by hot sulfuric acid	To pass test*

*Refer to Specifications for Analytical Reagents, American Chemical Society, 1941.

2. Test For:

a) Assay	h) SO_4
b) Cl	i) Li
c) Fe	j) B
d) Pb	k) Na
e) Water insolubles	l) Hg
f) Nitrogen compounds	m) Ba
g) Non-volatile matter	n) Al
	o) Si

3. Sampling: A 10 oz. sample of each shipment shall be delivered to the General Chemical Laboratory, Technical Building, 300 Area.

4. Allowable tolerances: None

General Electric Company
Hanford Works

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Date

W. J. Henning
6-27-49

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W. J. Henning
6-27-49

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HW-8183

OXYGEN

HW Material Number 43

1. Purchase Specifications:

- a) Commercial Grade
- b) Oxygen

99.5% Min.

2. Test for:

- a) Hydrogen
- b) Water

3. Sampling: A sample of each gas shipment shall be delivered to the General Chemical Laboratory, Technical Building, 300 Area.

4. Allowable tolerance: None

General Electric Company
Hanford Works

Approved

W. B. Heninger

Date

6-27-49

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Donald G. Heninger

Date

6-23-49

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HW-8183

PHOSPHORIC ACID

HW Material Number 317

BEST AVAILABLE COPY

1. Purchase Specifications

- | | |
|----------------------|--------------------------------|
| a) Phosphoric Acid | 85% |
| b) Chlorides | 0.01% |
| c) Iron | 0.005% Max. |
| d) Sulfate | 0.05% Max. |
| e) Alkali Phosphates | 0.25% Max. (As SO_4) |

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 General Chemical Laboratory, Technical Building, 300 Area.

4. Allowable Tolerance: Phosphoric Acid 83.0% Min.

General Electric Company
Hanford Works

Approved

Date

U. S. Atomic Energy Commission
Office of Hanford Directed Operations

Approved

Date

W. B. Geringer
Nov 4, 1947

Ronald J. Steiner
Nov 4, 1947

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101-8183

57

PHOSPHORIC ACID

Item Material Number 12

1. Purchase Specifications

- 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.

2. Test for:

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

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

4. Allowable Tolerance: Phosphoric Acid 75% + 1.5%
and - 0.5%

General Electric Company
Hanford Works

Approved

Date

J. F. Greninger
Mar 16, 1948

U. S. Atomic Energy Commission
Office of Hanford Directed Operations

Approved

Date

Donald L. Stewart
Mar 16, 1948

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HW-8143

POTASSIUM CHLORIDE

HW Material Number 316

1. Purchase Specifications

- | | |
|-----------------------------------|--------------------|
| a) Insolubles | 0.005% Max. |
| b) Neutrality | ACS test '41 p. 87 |
| c) Chlorate & Nitrate | |
| ClO ₃ | 0.001% Max. |
| NO ₃ | 0.003% Max. |
| d) Nitrogen Compounds (N) | 0.001% Max. |
| e) Phosphates | 0.002% Max. |
| f) Sulfur compounds as sulfates | 0.006% Max. |
| g) NH ₄ OH Precipitate | 0.005% Max. |

2. Test for:

- a) Insolubles
- b) Neutrality
- c) Chlorate & nitrate
- d) Nitrogen Compounds
- e) Phosphates
- f) Sulfur compounds as sulfates
- g) Water
- h) NH₄OH Precipitate

3. Sampling: A 16 oz. sample of each shipment shall be delivered to the General Chemical Laboratory, Technical Building, 300 Area.

4. Allowable Tolerance: None

General Electric Company
Hanford Works

Approved

M. G. Geringer

Date

Nov 4 1947

U. S. Atomic Energy Commission
Office of Hanford Directed Operations

Approved

Thomas J. Stinson

Date

Nov 4 1947

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HW-0121

POTASSIUM HYDROXIDE

HW Material Number 14

1. Purchase Specifications

- | | |
|--------------------------------|-------------|
| a) Total alkalinity (K_2O) | 70.5% Min. |
| b) K_2CO_3 | 2.0% Max. |
| c) Fe | 0.005% Max. |
| d) Chlorides as Cl | 0.05% Max. |
| e) Water Insolubles | 0.02% Max. |

2. Test for:

- a) Total alkalinity as K_2O
- b) K_2CO_3
- c) Fe
- d) Cl
- e) Water Insolubles

3. Sampling: A 16 oz. sample of each shipment shall be delivered to the General Chemical Laboratory, Technical Building, 300 Area.

4. Allowable Tolerance: None

General Electric Company
Hanford Works

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Date

U. S. Atomic Energy Commission
Office of Hanford Directed Operations

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Date

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HW-1136

POTASSIUM PERMANGANATE

HW Material Number 26

1. Purchase Specifications

- 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 of each shipment shall be delivered to the General Chemical Laboratory, Technical Building, 300 Area.

4. Allowable Tolerance: None

General Electric Company
Hanford Works

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Date

B. Geninger
Nov 4 1947

U. S. Atomic Energy Commission
Office of Hanford Directed Operations

Approved

Date

Franklin G. Stetson
Nov 12 1947

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HW-5183

SODIUM BICARBONATE

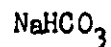
HW Material Number 31

1. Purchase Specifications

a) Commercial Grade

2. Test for:

a) Sodium Bicarbonate



3. Sampling: A 16 oz. sample of each shipment shall be delivered to the General Chemical Laboratory, Technical Building, 300 Area.

General Electric Company
Hanford Works

Approved *J. B. Geringer*

Date *Nov 4 1947*

U. S. Atomic Energy Commission
Office of Hanford Directed Operations

Approved *Donald E. Geringer*

Date *Nov 4 1947*

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HW-6183

SODIUM BISMUTHATE

HW Material Number 15

1. Purchase Specifications

- | | |
|----------------------|------------|
| a) Sodium Bismuthate | 80.0% Min. |
| b) Chlorides | 0.01% Max. |
| c) Insolubles | 0.10% Max. |

2. Test for:

- a) Sodium Bismuthate
- b) Chlorides
- c) Insolubles

3. Sampling: A 16 oz. sample of each shipment shall be delivered to the General Chemical Laboratory, Technical Building, 300 Area.

4. Allowable Tolerance: None

General Electric Company
Hanford Works

Approved

Date

R. Geringer
Nov 4, 1947

U. S. Atomic Energy Commission
Office of Hanford Directed Operations

Approved

Date

Donald G. Sturges
Dec 4, 1947

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HW-8153

SODIUM CARBONATE

HW Material Number 16

1. Purchase Specifications

- a) Total Na_2O 57.3% Min.
- b) Water Insolubles 0.10% Max.

2. Test for:

- a) Total Na_2O
- b) Water Insolubles

3. Sampling: A 16 oz. sample of each shipment shall be delivered to the General Chemical Laboratory, Technical Building, 300 Area.

4. Allowable Tolerance: None

General Electric Company
Hanford Works

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Date

U. S. Atomic Energy Commission
Office of Hanford Directed Operations

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Date

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HW-3183

SODIUM CHLORIDE (Rock Salt)

HW Material Number 110

1. Purchase Specifications

a) Commercial Grade

2. Test for:

a) Sodium Chloride

b) Insoluble

3. Sampling: A 16 oz. sample of each shipment shall be delivered to the General Chemical Laboratory, Technical Building, 300 area.

4. Allowable Tolerance: (Dry Basis)

General Electric Company
Hanford Works

Approved

W. Greiner
Date Nov 4 1947

U. S. Atomic Energy Commission
Office of Hanford Directed Operations

Approved

Donald S. Stinger
Date Nov 11 1947

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HW-8153

SODIUM CHLORIDE

HW Material Number 318

1. Purchase Specifications

- | | |
|---------------------------------------|---------------------|
| a) Insolubles | 0.005% Max. |
| b) Neutrality | ACS Test '41 p. 109 |
| c) Chlorate & Nitrate | 0.005% Max. |
| d) Nitrogen Compounds (N) | 0.001% Max. |
| e) Phosphates | 0.0005% Max. |
| f) Sulfates | 0.001% Max. |
| g) NH_4OH Precipitate | ACS Test '41 P. 109 |

2. Test for:

- a) Insoluble
- b) Neutrality
- c) Chlorate & Nitrate
- d) Nitrogen Compounds
- e) Phosphates
- f) Sulfates
- g) NH_4OH Precipitate
- h) Water

3. Sampling: A 16 oz. sample of each shipment shall be delivered to the General Chemical Laboratory, Technical Building, 300 Area.

4. Allowable Tolerance: None

General Electric Company
Hanford Works

Approved [Signature]

Date Mar 4 1947

U. S. Atomic Energy Commission
Office of Hanford Directed Operations

Approved [Signature]

Date Mar 4 1947

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R

HW-5185

SODIUM DICHROMATE

HW Material Number 112

1. Purchase Specifications

- 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 General Chemical Laboratory, Technical Building, 300 Area.

4. Allowable Tolerance: None

General Electric Company
Hanford Works

Approved

Date

Al. Brenner
Nov 4, 1947

U. S. Atomic Energy Commission
Office of Hanford Directed Operations

Approved

Date

Donald E. Steingas
Nov 4, 1947

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HW-1155

SODIUM DICHROMATE

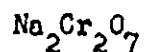
HW Material Number 17

1. Purchase Specification

- a) This material is obtained by intra-plant transfer from the 100 Area.

2. Test for:

- a) In addition to the specification analyses, the following tests shall be run at the time the material is received in the 200 Area.



Sulfates

3. Sampling: A 16 oz. sample of each shipment shall be delivered to the General Chemical Laboratory, Technical Building, 300 Area.

4. Allowable Tolerances:

- | | |
|---------------------------------------|-----------|
| a) $\text{Na}_2\text{Cr}_2\text{O}_7$ | 86% Min. |
| b) Sulfates | 0.5% Max. |

General Electric Company
Hanford Works

Approved

W.D. Brunninger

Date

Nov 4, 1947

U. S. Atomic Energy Commission
Office of Hanford Directed Operations

Approved

R. Frank J. Smith

Date

Nov 4, 1947

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HW-3185

SODIUM HYDROXIDE, Caustic Soda

HW Material Number 19

1. Purchase Specifications

- a) Commercial Grade
- b) Sodium Oxide 38.9 $\pm$ 1%
- c) Sodium Chloride 1.5% Max.

2. Test for:

- a) Sodium Oxide - Na_2O
- b) Sodium Chloride - NaCl

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

4. Allowable Tolerance: None

General Electric Company
Hanford Works

Approved

W. H. Greninger
Date Nov 4, 1947

U. S. Atomic Energy Commission
Office of Hanford Directed Operations

Approved

Donald E. G. R.
Date Nov 4, 1947

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HW-8183

SODIUM NITRATE, Commercial Grade

HW Material Number 22

1. Purchase Specifications

- | | |
|---------------------|------------|
| a) Water Insolubles | 0.20% Max. |
| b) Total Nitrate | 60.0% Min. |
| c) Total Chlorides | 1.0% 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 General Chemical Laboratory, Technical Building, 300 Area.

4. Allowable Tolerance: None

General Electric Company
Hanford Works

Approved

Date

W. B. Greninger
Nov 4, 1947

U. S. Atomic Energy Commission
Office of Hanford Directed Operations

Approved

Date

Donald S. Sturges
Nov 24, 1947

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HW-9183

SODIUM NITRITE

HW Material Number 23

1. Purchase Specifications

- 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

3. Sampling: A 16 oz. sample of each shipment shall be delivered to the General Chemical Laboratory, Technical Building, 300 Area.

4. allowable Tolerance: None

General Electric Company
Hanford Works

Approved

Date

W. Breninger
Nov 4, 1947

U. S. Atomic Energy Commission
Office of Hanford Directed Operations

Approved

Date

Donald G. Stenger
Nov. 4, 1947

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FW-6183

SODIUM PHOSPHATE
(Dibasic, Commercial Grade)

HW Material Number 105

1. Purchase Specifications

a) 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 of each shipment shall be delivered to the General Chemical Laboratory, Technical Building, 300 Area.

General Electric Company
Hanford Works

Approved

R. Greninger

Date

Nov 4, 1947

U. S. Atomic Energy Commission
Office of Hanford Director Delegations

Approved

Donald E. Stewart

Date

Nov 4, 1947

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HW-5185

SODIUM PYROPHOSPHATE

HW Material Number 320

1. Purchase Specifications

- 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 General Chemical Laboratory, Technical Building, 300 Area.

4. Allowable Tolerance: None

General Electric Company
Hanford Works

Approved

Date

W.B. Greninger
Nov 4, 1947

U. S. Atomic Energy Commission
Office of Hanford District Operations

Approved

Date

Ronald S. Stinger
Nov 4, 1947

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HW-3153

SODIUM SILICATE AQUEOUS

HW Material Number 113

1. Purchase Specifications

a) Ratio $\text{SiO}_2/\text{Na}_2\text{O}$	3.20 ± 0.5
b) Na_2O	$8.9 \pm 0.2\%$
c) SiO_2	$28.5 \pm 0.5\%$

2. Test for:

- a) Na_2O
- b) SiO_2

3. Sampling: A 16 oz. sample of each shipment shall be delivered to the General Chemical Laboratory, Technical Building, 300 Area.

4. Allowable Tolerance: None

General Electric Company
Hanford Works

Approved

W. B. Greninger

Date

Nov 4 1947

U. S. Atomic Energy Commission
Office of Hanford Directed Operations

Approved

Donald G. Stange

Date

Nov. 4, 1947

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EW-3183

SODIUM SULFITE, Anhydrous

HW Material Number 114

1. Purchase Specifications

- a) Commercial Grade - Anhydrous

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 General Chemical Laboratory, Technical Building, 300 Area.

4. Allowable Tolerance:

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

General Electric Company
Hanford Works

Approved *W. B. Geringer*

Date *Nov 4, 1947*

U. S. Atomic Energy Commission
Office of Hanford Directed Operations

Approved *Donald G. Stange*

Date *Nov 4, 1947*

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HW-1135

STEEL SLEEVES

HW Material Number 321

1. Purchase Specifications

a) Dimension specifications only.

2. Test for:

a) Checked by "P" Department

3. Sampling: If an analysis of this material is desired the General Chemical Laboratory Supervisor shall be consulted as to the size of the sample to be submitted.

General Electric Company
Hanford Works

Approved

A. B. Greninger

Date

Nov 4, 1949

U. S. Atomic Energy Commission
Office of Hanford Directed Operations

Approved

W. L. S. Sturge

Date

Nov 4, 1949

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EW-211;

SULFURIC ACID, Type A

HW Material Number 20

1. Purchase Specifications

- | | |
|--|------------------------------|
| a) Sulfuric Acid | 92% |
| 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:

- | | |
|--------------|------------------|
| a) H_2SO_4 | $92.0 \pm 1.5\%$ |
|--------------|------------------|

General Electric Company
Hanford Works

Approved

Date

B. Greninger
Feb 1, 1947

U. S. Atomic Energy Commission
Office of Hanford Directed Operations

Approved

Date

Don H. [unclear]
Nov 1, 1947

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HW-8183

SULFURIC ACID

(for Power Dept.)

HW Material Number 116

1. Purchase Specifications

a) Commercial grade

68-92% H_2SO_4

2. Test for:

a) Material analyzed on request only.

3. Sampling: A 16 oz. sample of each shipment shall be delivered to the General Chemical Laboratory, Technical Building, 300 Area.

General Electric Company
Hanford Works

Approved

Date

W. J. Greninger
Nov 4, 1947

U. S. Atomic Energy Commission
Office of Hanford Directed Operations

Approved

Date

Richard J. [unclear]
Nov 4, 1947

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HW-2143

TIN

HW Material Number 322

1. Purchase Specifications

a) Virgin Tin Assay 99.9% Min.

2. Test for:

a) Cadmium

b) Sulfur

3. Sampling: Three ingots or bars from each shipment or lot shall be delivered to the General Chemical Laboratory, Technical Building, 300 Area.

4. allowable Tolerance: None

General Electric Company
Hanford Works

Approved W. B. Heninger

Date Nov 4. 1947

U. S. Atomic Energy Commission
Office of Hanford Directed Operations

Approved Donald J. Heninger

Date Nov. 4. 1947

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HW-2183

TRI-CHLORO-ETHYLENE

HW Material Number 323

1. Purchase Specifications

- | | |
|---------------------------------------|------------------------------|
| a) Distillation range 1st drop
95% | 84.4°C Min.
84.4 - 90.0°C |
| b) Total alkalinity (as NaOH) | 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 General Chemical Laboratory, Technical Building, 300 area.

4. Allowable Tolerance: None

General Electric Company
Hanford Works

Approved

Date

W.B. Livingston
Nov 4, 1947

U. S. Atomic Energy Commission
Office of Hanford Directed Operations

Approved

Date

Frank S. Jones
10.24.1947

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-8123

ZIRCONIUM CARBONATE GEL

HW Material Number 21

1. Purchase Specifications

- | | |
|---------------------------|-------------------------|
| a) Zirconium Oxide | 19% Min. |
| b) Chlorides | 0.1% Max. |
| c) Nitric Acid Insolubles | 0.30% Max. |
| d) Fluoride Precipitate | To pass following test: |

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 1 N. Any turbidity should not exceed that obtained from the same volume of NaCl solution (1 ml of 0.33 g. NaCl per liter diluted to 55 ml.) when acidified with HNO₃ and treated with 1 ml of 2% Ag NO₃.

2. Test for:

- a) Zirconium oxide
- b) Chloride

3. Sampling: A 16 oz. sample of each shipment shall be delivered to the General Chemical Laboratory, Technical Building, 300 Area.

4. Allowable Tolerance: None

General Electric Company
Hanford Works

Approved

W.B. Greninger

Date

Nov 4, 1947

U. S. Atomic Energy Commission
Office of Hanford Directed Operations

Approved

Donald B. Stegman

Date

Nov. 4, 1947

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