SECTION 1: Identification

1.1. Identification
Product form: Mixture
Trade name: SILVALOY® 505 Flux Coated
Product code: A00000197

1.2. Recommended use and restrictions on use
Recommended use: Alloys for brazing/soldering and other metallurgical processes

1.3. Supplier
Lucas-Milhaupt, Inc.
5656 South Pennsylvania Ave.
Cudahy, WI 53110 - USA
T (414) 769-6000
LM_SDSinfo@lucasmilhaupt.com - www.Lucasmilhaupt.com

1.4. Emergency telephone number
Emergency number: CHEMTREC within the USA and Canada: 1-800-424-9300
CHEMTREC outside the USA and Canada +1 701-741-5970

SECTION 2: Hazard(s) identification

2.1. Classification of the substance or mixture

GHS-US classification
Skin sensitisation, category 1B: H317 - May cause an allergic skin reaction.
Carcinogenicity, Category 2: H351 - Suspected of causing cancer.
Reproductive toxicity, Category 2: H361 - Suspected of damaging fertility or the unborn child.
Specific target organ toxicity — Single exposure, Category 3: H336 - May cause drowsiness or dizziness.

Full text of H statements: see section 16

2.2. GHS Label elements, including precautionary statements

GHS-US labelling
Hazard pictograms (GHS-US): ![Pictograms]

Signal word (GHS-US): H317 - May cause an allergic skin reaction.

Hazard statements (GHS-US): H351 - Suspected of causing cancer.
H361 - Suspected of damaging fertility or the unborn child.

Precautionary statements (GHS-US): P201 - Obtain special instructions before use.
P202 - Do not handle until all safety precautions have been read and understood.
P261 - Avoid breathing dust/fume/gas/mist/vapours/spray.
P271 - Store only outdoors or in a well-ventilated area.
P272 - Contaminated work clothing must not be allowed out of the workplace.
P280 - Wear protective gloves/protective clothing/eye protection/face protection.
P302+P352 - If on skin: Wash with plenty of water.
P304+P340 - If inhaled: Remove person to fresh air and keep comfortable for breathing.
P308+P313 - If exposed or concerned: Get medical advice/attention.
P312 - Call a poison center/doctor if you feel unwell.
P321 - Specific treatment (see supplemental first aid instruction on this label).
P333+P313 - If skin irritation or rash occurs: Get medical advice/attention.
P363 - Wash contaminated clothing before reuse.
P403+P233 - Store in a well-ventilated place. Keep container tightly closed.
P405 - Store locked up.
P501 - Dispose of contents/container to hazardous or special waste collection point.
2.3. Other hazards which do not result in classification
No additional information available

2.4. Unknown acute toxicity (GHS US)
Not applicable

SECTION 3: Composition/information on ingredients

3.1. Substances
Not applicable

3.2. Mixtures

<table>
<thead>
<tr>
<th>Name</th>
<th>Product identifier</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Silver</td>
<td>(CAS-No.) 7440-22-4</td>
<td>25 - 50</td>
</tr>
<tr>
<td>Zinc</td>
<td>(CAS-No.) 7440-86-6</td>
<td>15 - 30</td>
</tr>
<tr>
<td>Copper</td>
<td>(CAS-No.) 7440-50-8</td>
<td>10 - 25</td>
</tr>
<tr>
<td>Boric acid (H3BO3)</td>
<td>(CAS-No.) 10043-35-3</td>
<td>5 - 20</td>
</tr>
<tr>
<td>Proprietary Fluoride Compound*</td>
<td>(CAS-No.) Trade Secret</td>
<td>5 - 20</td>
</tr>
<tr>
<td>Nickel</td>
<td>(CAS-No.) 7440-02-0</td>
<td>2 - 6</td>
</tr>
</tbody>
</table>

*Chemical name, CAS number and/or exact concentration have been withheld as a trade secret

Full text of hazard classes and H-statements : see section 16

SECTION 4: First-aid measures

4.1. Description of first aid measures
First-aid measures general : IF exposed or concerned: Get medical advice/attention.
First-aid measures after inhalation : Remove person to fresh air and keep comfortable for breathing.
First-aid measures after skin contact : Wash skin with plenty of water. Take off contaminated clothing. If skin irritation or rash occurs: Get medical advice/attention.
First-aid measures after eye contact : Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention.
First-aid measures after ingestion : Call a poison center or a doctor if you feel unwell. Rinse mouth.

4.2. Most important symptoms and effects (acute and delayed)
Symptoms/effects : May cause drowsiness or dizziness.
Symptoms/effects after skin contact : May cause an allergic skin reaction.
Symptoms/effects after eye contact : Eye irritation.

4.3. Immediate medical attention and special treatment, if necessary
Treat symptomatically.

SECTION 5: Fire-fighting measures

5.1. Suitable (and unsuitable) extinguishing media
Suitable extinguishing media : Dry powder. Water spray. Foam.
Unsuitable extinguishing media : Water.

5.2. Specific hazards arising from the chemical
Reactivity : The product is non-reactive under normal conditions of use, storage and transport.

5.3. Special protective equipment and precautions for fire-fighters
Protection during firefighting : Do not attempt to take action without suitable protective equipment. Self-contained breathing apparatus. Complete protective clothing.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

6.1.1. For non-emergency personnel
Emergency procedures : Do not breathe dust/fume/gas/mist/vapours/spray. Only qualified personnel equipped with suitable protective equipment may intervene.

6.1.2. For emergency responders
Protective equipment : Do not attempt to take action without suitable protective equipment. For further information refer to section 8: “Exposure controls/personal protection”.
6.2. Environmental precautions
Avoid release to the environment. Notify authorities if product enters sewers or public waters.

6.3. Methods and material for containment and cleaning up
For containment: Collect spillage.
Methods for cleaning up: Mechanically recover the product. Notify authorities if product enters sewers or public waters.
Other information: Dispose of materials or solid residues at an authorized site.

6.4. Reference to other sections
For further information refer to section 13.

SECTION 7: Handling and storage
7.1. Precautions for safe handling
Precautions for safe handling: Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Wear personal protective equipment. Avoid contact with skin and eyes. Do not breathe dust/fume/gas/mist/vapours/spray. Use only outdoors or in a well-ventilated area.
Hygiene measures: Contaminated work clothing should not be allowed out of the workplace. Wash contaminated clothing before reuse. Do not eat, drink or smoke when using this product. Always wash hands after handling the product. Separate working clothes from town clothes. Launder separately.

7.2. Conditions for safe storage, including any incompatibilities
Storage conditions: Store locked up. Store in a well-ventilated place. Keep cool. Keep container tightly closed.

SECTION 8: Exposure controls/personal protection
8.1. Control parameters

<table>
<thead>
<tr>
<th>Compound</th>
<th>ACGIH TWA (mg/m³)</th>
<th>ACGIH STEL (mg/m³)</th>
<th>OSHA PEL (TWA) (mg/m³)</th>
<th>OSHA PEL (TWA) (dust and mist) (mg/m³)</th>
<th>OSHA PEL (TWA) (fume) (mg/m³)</th>
<th>IDLH (mg/m³)</th>
<th>NIOSH REL (TWA) (mg/m³)</th>
<th>NIOSH REL (TWA) (dust and mist) (mg/m³)</th>
<th>NIOSH REL (TWA) (fume) (mg/m³)</th>
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</thead>
<tbody>
<tr>
<td>Boric acid (H3BO3) (10043-35-3)</td>
<td>ACGIH TWA</td>
<td>2 mg/m³</td>
<td>ACGIH STEL</td>
<td>6 mg/m³</td>
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<tr>
<td>Copper (7440-50-8)</td>
<td>ACGIH TWA</td>
<td>0.2 mg/m³</td>
<td>OSHA PEL (TWA)</td>
<td>0.1 mg/m³</td>
<td>1 mg/m³</td>
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<td>OSHA PEL (TWA)</td>
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<td>US IDLH (mg/m³)</td>
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<td>1 mg/m³</td>
<td>0.1 mg/m³</td>
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</tr>
<tr>
<td>Nickel (7440-02-0)</td>
<td>ACGIH TWA</td>
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</tr>
<tr>
<td></td>
<td>OSHA PEL (TWA)</td>
<td></td>
<td>US IDLH (mg/m³)</td>
<td>10 mg/m³</td>
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<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Silver (7440-22-4)</td>
<td>ACGIH TWA</td>
<td>0.1 mg/m³</td>
<td>OSHA PEL (TWA)</td>
<td>0.01 mg/m³</td>
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<tr>
<td></td>
<td>OSHA PEL (TWA)</td>
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<td>US IDLH (mg/m³)</td>
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<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>NIOSH REL (TWA)</td>
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<td>0.01 mg/m³</td>
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</tr>
<tr>
<td>Zinc (7440-66-6)</td>
<td>ACGIH TWA</td>
<td>2 mg/m³ (as ZnO)</td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

8.2. Appropriate engineering controls
Appropriate engineering controls: Ensure good ventilation of the work station.
Environmental exposure controls: Avoid release to the environment.

**8.3. Individual protection measures/Personal protective equipment**

**Hand protection:**
Protective gloves

**Eye protection:**
Safety glasses

**Skin and body protection:**
Wear suitable protective clothing

**Respiratory protection:**
In case of inadequate ventilation wear respiratory protection.

### SECTION 9: Physical and chemical properties

#### 9.1. Information on basic physical and chemical properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical state</td>
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<td>Colour</td>
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<tr>
<td>Odour</td>
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<tr>
<td>Odour threshold</td>
<td>No data available</td>
</tr>
<tr>
<td>pH</td>
<td>No data available</td>
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<tr>
<td>Melting point</td>
<td>No data available</td>
</tr>
<tr>
<td>Freezing point</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Boiling point</td>
<td>No data available</td>
</tr>
<tr>
<td>Flash point</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Relative evaporation rate (butylacetate=1)</td>
<td>No data available</td>
</tr>
<tr>
<td>Flammability (solid, gas)</td>
<td>Non flammable.</td>
</tr>
<tr>
<td>Vapour pressure</td>
<td>No data available</td>
</tr>
<tr>
<td>Relative vapour density at 20 °C</td>
<td>No data available</td>
</tr>
<tr>
<td>Relative density</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Solubility</td>
<td>No data available</td>
</tr>
<tr>
<td>Log Pow</td>
<td>No data available</td>
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<tr>
<td>Auto-ignition temperature</td>
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<tr>
<td>Decomposition temperature</td>
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<tr>
<td>Viscosity, kinematic</td>
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<tr>
<td>Viscosity, dynamic</td>
<td>No data available</td>
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<td>Explosive limits</td>
<td>Not applicable</td>
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<tr>
<td>Explosive properties</td>
<td>No data available</td>
</tr>
<tr>
<td>Oxidising properties</td>
<td>No data available</td>
</tr>
</tbody>
</table>

#### 9.2. Other information

No additional information available

### SECTION 10: Stability and reactivity

#### 10.1. Reactivity
The product is non-reactive under normal conditions of use, storage and transport.

#### 10.2. Chemical stability
Stable under normal conditions.

#### 10.3. Possibility of hazardous reactions
No dangerous reactions known under normal conditions of use.

#### 10.4. Conditions to avoid
None under recommended storage and handling conditions (see section 7).
10.5. Incompatible materials

Acids.

10.6. Hazardous decomposition products

Under normal conditions of storage and use, hazardous decomposition products should not be produced.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity (oral) : Not classified
Acute toxicity (dermal) : Not classified
Acute toxicity (inhalation) : Not classified

**Boric acid (H3BO3) (10043-35-3)**

- LD50 oral rat : 2660 mg/kg
- LD50 dermal rabbit : > 2000 mg/kg
- LC50 inhalation rat (mg/l) : > 0.16 mg/l/4h
- ATE US (oral) : 2660 mg/kg bodyweight

**Nickel (7440-02-0)**

- LD50 oral rat : > 9000 mg/kg
- LC50 inhalation rat (mg/l) : > 10.2 mg/l (Exposure time: 1 h)

**Proprietary Fluoride Compound**

- LD50 oral rat : 4250 mg/kg

**Silver (7440-22-4)**

- LD50 oral rat : > 5000 mg/kg
- LD50 dermal rat : > 2000 mg/kg

**Zinc (7440-66-6)**

- LD50 oral rat : 630 mg/kg
- Skin corrosion/irritation : Not classified
- Serious eye damage/irritation : Not classified
- Respiratory or skin sensitisation : May cause an allergic skin reaction.
- Germ cell mutagenicity : Not classified
- Carcinogenicity : Suspected of causing cancer.

**Nickel (7440-02-0)**

- IARC group : 2B - Possibly carcinogenic to humans
- National Toxicity Program (NTP) Status : Reasonably anticipated to be Human Carcinogen
- In OSHA Hazard Communication Carcinogen list : Yes

Reproductive toxicity : Suspected of damaging fertility or the unborn child.
STOT-single exposure : May cause drowsiness or dizziness.

STOT-repeated exposure : Not classified

**Nickel (7440-02-0)**

- STOT-repeated exposure : Causes damage to organs through prolonged or repeated exposure.

Aspiration hazard : Not classified
Viscosity, kinematic : No data available
Symptoms/effects : May cause drowsiness or dizziness.
Symptoms/effects after skin contact : May cause an allergic skin reaction.
Symptoms/effects after eye contact : Eye irritation.
### SECTION 12: Ecological information

#### 12.1. Toxicity

**Ecology - general:** Very toxic to aquatic life.

**Boric acid (H3BO3) (10043-35-3)**
- EC50 Daphnia 1: 115 - 153 mg/l (Exposure time: 48 h - Species: Daphnia magna)

**Copper (7440-50-8)**
- LC50 fish 1: 0.0068 - 0.0156 mg/l (Exposure time: 96 h - Species: Pimephales promelas)
- EC50 Daphnia 1: 0.03 mg/l (Exposure time: 48 h - Species: Daphnia magna [Static])
- LC50 fish 2: < 0.3 mg/l (Exposure time: 96 h - Species: Pimephales promelas [static])

**Nickel (7440-02-0)**
- LC50 fish 1: > 100 mg/l (Exposure time: 96 h - Species: Brachydanio rerio)
- EC50 Daphnia 1: > 100 mg/l (Exposure time: 48 h - Species: Daphnia magna)
- LC50 fish 2: 1.3 mg/l (Exposure time: 96 h - Species: Cyprinus carpio [semi-static])
- EC50 Daphnia 2: 1 mg/l (Exposure time: 48 h - Species: Daphnia magna [Static])

**Silver (7440-22-4)**
- LC50 fish 1: 0.00155 - 0.00293 mg/l (Exposure time: 96 h - Species: Pimephales promelas [static])
- EC50 Daphnia 1: 0.00024 mg/l (Exposure time: 48 h - Species: Daphnia magna [Static])
- LC50 fish 2: 0.0062 mg/l (Exposure time: 96 h - Species: Oncorhynchus mykiss [flow-through])

**Zinc (7440-66-6)**
- LC50 fish 1: 2.16 - 3.05 mg/l (Exposure time: 96 h - Species: Pimephales promelas [flow-through])
- EC50 Daphnia 1: 0.139 - 0.908 mg/l (Exposure time: 48 h - Species: Daphnia magna [Static])
- LC50 fish 2: 0.211 - 0.269 mg/l (Exposure time: 96 h - Species: Pimephales promelas [semi-static])

#### 12.2. Persistence and degradability

No additional information available

#### 12.3. Bioaccumulative potential

**Boric acid (H3BO3) (10043-35-3)**
- BCF fish 1: 0
- Log Pow: -0.757 (at 25 °C)

#### 12.4. Mobility in soil

No additional information available

#### 12.5. Other adverse effects

No additional information available

### SECTION 13: Disposal considerations

#### 13.1. Disposal methods

Waste treatment methods: Dispose of contents/container in accordance with licensed collector’s sorting instructions.

### SECTION 14: Transport information

**Department of Transportation (DOT)**

In accordance with DOT

Not applicable

**Transportation of Dangerous Goods**

Not applicable
Transport by sea
Not applicable

Air transport
Not applicable

SECTION 15: Regulatory information

15.1. US Federal regulations

<table>
<thead>
<tr>
<th>Substance</th>
<th>Inventory/Reporting Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boric acid (H3BO3) (10043-35-3)</td>
<td>Listed on the United States TSCA (Toxic Substances Control Act) inventory</td>
</tr>
<tr>
<td>Copper (7440-50-8)</td>
<td>Listed on the United States TSCA (Toxic Substances Control Act) inventory Subject to reporting requirements of United States SARA Section 313 CERCLA RQ 5000 lb no reporting of releases of this hazardous substance is required if the diameter of the pieces of the solid metal released is &gt;100 μm</td>
</tr>
<tr>
<td>Nickel (7440-02-0)</td>
<td>Listed on the United States TSCA (Toxic Substances Control Act) inventory Subject to reporting requirements of United States SARA Section 313 CERCLA RQ 100 lb no reporting of releases of this hazardous substance is required if the diameter of the pieces of the solid metal released is &gt;100 μm</td>
</tr>
<tr>
<td>Proprietary Fluoride Compound</td>
<td>Listed on the United States TSCA (Toxic Substances Control Act) inventory</td>
</tr>
<tr>
<td>Silver (7440-22-4)</td>
<td>Listed on the United States TSCA (Toxic Substances Control Act) inventory Subject to reporting requirements of United States SARA Section 313 CERCLA RQ 1000 lb no reporting of releases of this hazardous substance is required if the diameter of the pieces of the solid metal released is &gt;100 μm</td>
</tr>
<tr>
<td>Zinc (7440-66-6)</td>
<td>Listed on the United States TSCA (Toxic Substances Control Act) inventory Subject to reporting requirements of United States SARA Section 313 CERCLA RQ 454 kg no reporting of releases of this hazardous substance is required if the diameter of the pieces of the solid metal released is &gt;100 μm</td>
</tr>
</tbody>
</table>

15.2. International regulations

<table>
<thead>
<tr>
<th>Substance</th>
<th>Inventory/Reporting Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boric acid (H3BO3) (10043-35-3)</td>
<td>Listed on the TCSI (Taiwan Chemical Substance Inventory)</td>
</tr>
<tr>
<td>Copper (7440-50-8)</td>
<td>Listed on the TCSI (Taiwan Chemical Substance Inventory)</td>
</tr>
<tr>
<td>Nickel (7440-02-0)</td>
<td>Listed on the TCSI (Taiwan Chemical Substance Inventory)</td>
</tr>
<tr>
<td>Proprietary Fluoride Compound</td>
<td>Listed on the TCSI (Taiwan Chemical Substance Inventory)</td>
</tr>
<tr>
<td>Silver (7440-22-4)</td>
<td>Listed on the TCSI (Taiwan Chemical Substance Inventory)</td>
</tr>
<tr>
<td>Zinc (7440-66-6)</td>
<td>Listed on the TCSI (Taiwan Chemical Substance Inventory)</td>
</tr>
</tbody>
</table>

15.3. US State regulations

WARNING: This product can expose you to Nickel, which is known to the State of California to cause cancer. For more information go to www.P65Warnings.ca.gov.
### SECTION 16: Other information

According to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Full text of H-statements:

<table>
<thead>
<tr>
<th>H</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>H317</td>
<td>May cause an allergic skin reaction.</td>
</tr>
<tr>
<td>H36</td>
<td>May cause drowsiness or dizziness.</td>
</tr>
<tr>
<td>H351</td>
<td>Suspected of causing cancer.</td>
</tr>
<tr>
<td>H361</td>
<td>Suspected of damaging fertility or the unborn child.</td>
</tr>
</tbody>
</table>

SDS US (GHS HazCom 2012)

Although reasonable care has been taken in the preparation of this document, we extend no warranties and make no representations as to the accuracy or completeness of the information contained therein, and assume no responsibility regarding the suitability of this information for the user's intended purposes or for the consequences of its use. Each individual should make a determination as to the suitability of the information for their particular purpose(s).

Lucas-Milhaupt, Inc.

---

**COMPONENT**

<table>
<thead>
<tr>
<th>Carcinogenicity</th>
<th>Developmental toxicity</th>
<th>Reproductive toxicity male</th>
<th>Reproductive toxicity female</th>
<th>No significant risk level (NSRL)</th>
<th>Maximum allowable dose level (MADL)</th>
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<tbody>
<tr>
<td>Nickel(7440-02-0)</td>
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**COMPONENT**

<table>
<thead>
<tr>
<th>State or local regulations</th>
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<tbody>
<tr>
<td>Boric acid (H3BO3)(10043-35-3)</td>
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<tr>
<td>Copper(7440-50-8)</td>
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<tr>
<td>Silver(7440-22-4)</td>
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<td>Zinc(7440-66-6)</td>
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