Investigating Secure Disk Erasure with Household Chemicals

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Dead Disk

- How to destroy data on disk?
- Overwriting or secure erase.
- What if disk is dead?
- Drill it to make asymmetric.
- Sand it down.
- Seems a little crude and mechanical.
Disks

- Spinning Rust.
- Disk might be glass or aluminium.
- Various ferromagnetic materials (iron/cobalt alloys/oxides).
- Some kind of polymer on top to stop corrosion.
- Would like way to destroy.
- Should be self evident that data is gone.
Vinegar (Acetic Acid)

Aldi special.
Coke (Carbonic/Phosphoric Acid)

Urban legends true?
Status check
Bleach (*Sodium hypochlorite*)

Don’t expect much.
Salt and boiling water

Give it a good clean.
Battery Acid (Sulphuric Acid)

Nasty stuff.
Status Check
Baking Soda and boiling water (Sodium bicarbonate)

Cleaning our the acid.
Caustic Soda (Sodium Hydroxide)

For cleaning drains. Strong base, but not organic.
(Run)
Status Check
Weathering (plus sand paper, steel file and nail)
Curie temperature — where things stop being ferromagnetic.

<table>
<thead>
<tr>
<th>Material</th>
<th>Temperature (°C)</th>
<th>Colour</th>
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</thead>
<tbody>
<tr>
<td>Cobalt</td>
<td>1115</td>
<td>Yellow/White hot</td>
</tr>
<tr>
<td>Iron</td>
<td>770</td>
<td>Cherry Red</td>
</tr>
<tr>
<td>Various Oxides</td>
<td>400–600</td>
<td>Dark Red</td>
</tr>
<tr>
<td>Nickel</td>
<td>354</td>
<td>Not even glowing</td>
</tr>
</tbody>
</table>

Unlikely to be self evident. Might be fun.
Conclusion

- Looks like polymer does a good job.
- Without polymer, caustic soda might work.
- However, might as well file it down.