

Rebinder

Rebinder is a dynamically assembling structural material made of a liquid metal blend. When appropriately manipulated and with sufficient volume, it can near-instantly take on a specified shape.

It is important to note that Rebinder is *not* a nanomachine compound and has no ability to shape itself without a purpose-built control system.

Designer:	Noval Defense, Space, and Security
Manufacturer:	Noval Heavy Industries
Fielded by:	Noval Heavy Industries, New Dusk Conclave
Availability:	Only as a component of existing products.

History

During the development of the [NH-M-M1 "SCALE"](#), Noval engineers needed a way to rearrange the small devices while also providing power. Early mechanical-only solutions proved to be too unwieldy and were overly susceptible to damage. The engineers identified that a material that could pair with SCALES in a fashion similar to organic skin and scales would be beneficial.

The solution was Rebinder. SCALES were designed to attach to the material with a simple electrostatic binding that allowed current to travel in both directions. The Rebinder itself would provide the support, shaping, and conductivity that the engineers' designs required.

Since then, Noval has continued to find new ways to take advantage of the material in applications both civilian and military.

Function and Design

Rebinder is a proprietary liquid metal compound that functions as a self-assembling colloidal dispersion. When an electric field is applied to Rebinder, its constituent particles swiftly begins to order themselves. The result is a surprisingly resilient structure that maintains its shape so long as the field is maintained.

The shaping process of Rebinder is managed by a master controller devices and a number of localized controller devices. The master controller manages the various shapes that a body of Rebinder might be generating at any given time. The localized controllers manage the specifics behind those shapes, commanding numerous 'nerve' receptors that sit within the liquid suspension. These receptors, when triggered by a local controller, adjust the ambient charge in the liquid around them.

The liquid is designed to only form bonds with itself or materials designed to connect to it. In the event that a foreign and/or invasive material enters the Rebinder liquid, local control units will attempt to 'shed' the offending material by ejecting it from the liquid suspension. This shedding process can be overridden by a master controller unit.

The application of excessive kinetic force to a Rebinder-formed structure tends to shatter and return the structure's materials back to the slush that created it. The structure can then be re-generated, if desired. Energy damage to Rebinder may melt or otherwise render the liquid metal useless. In this event, the non-functional Rebinder will be treated like a foreign substance and shed.

While Rebinder can quickly shift from a liquid state to a solid state, it cannot form into any sort of machinery, simple or complex, on its own. It can, however, act as a support structure for other devices.

In the event that the master controller unit is unavailable, one of the local controller units will be temporarily promoted and assume control of the overall system. If a foreign device attempts to manipulate the fields within the Rebinder suspension to prevent or subsume the controller's ability to shape the liquid metal, the controllers are able to adjust the field and maintain control under most circumstances.

Appearance

At rest, Rebinder is a silvery liquid with countless black metallic specs within it. It has a consistency similar to well-shaken paint. In its solid state, it feels like a well-polished piece of metal sculpture.

OOO Notes

[Whisper](#) created this article on 2020/03/12 19:20.

- [Approval Thread](#)

Additional reading on the concept of a self-assembling colloidal dispersion:

- <https://onlinelibrary.wiley.com/doi/abs/10.1002/sml.201102265>
- <http://physics.gu.se/~frtbm/joomla/media/mydocs/LennartSjogren/kap9.pdf>
- <https://www.ias.ac.in/article/fulltext/reso/023/03/0263-0275>
- https://nanohub.org/resources/22252/download/NACK_U3_Benanti_Colloidal_and_Self_Assembly_Materials_I.pdf

From:

<https://wiki.stararmy.com/> - **STAR ARMY**

Permanent link:

<https://wiki.stararmy.com/doku.php?id=materials:rebinder>

Last update: **2023/12/20 18:20**

