Delivery systems are now widely used as cosmetic ingredient carriers, under many different forms, including liposomes, nano or microspheres. However, if the transport of the active molecule within the epidermis is the first objective of the use of such systems, stabilization of the encapsulated or entrapped molecule is also one of the major goals to be achieved. This stabilization can only be obtained if the active molecule stays inside the carrier during formulation, and if the carrier is physicochemically stable. Kobo Products has thus developed the Glycosphere, a stable and protective delivery system.

Structure
Glycospheres are supramolecular configurations, organized around a solid inner core. The latter, consisting of modified starch, is powerfully hydrophilic and endows the particle with its chemical and physicochemical stability as well as its biocompatibility. A single layer of fatty acids is covalently grafted at the periphery of this central core, endowing the particle with a peripheral lipophilic nature, without modifying its internal hydrophilic nature. The Glycosphere can thus organize polar lipids and hence retain and deliver lipophilic active agents.

Entrapment
Both hydrophilic and lipophilic active agents can be incorporated into Glycospheres. Two different types of chemical interactions play a role in their capacity to retain molecules within the Glycosphere: ionic bonds and hydrophobic interactions.

Hydrophilic Active Ingredients
The central core of Glycospheres contains strongly cationic groups. Anionic hydrophilic actives are thus retained by high energy ionic bonds. Entrapment stability and performance are thus incomparably greater than with any other delivery system. Macromolecules such as enzymes can be entrapped within the inner core, up to 200,000 daltons.

Lipophilic Active Ingredients
The potent cohesion existing between the lipid layer and polar lipids arranged at the periphery enables loading with lipophilic compounds.

Stabilization of Papain
Similarly to vitamins, enzymes are unlikely to maintain their activity when formulated. We measured the enzymatic activity of papain, a strong proteolytic enzyme, in solution and entrapped within Glycospheres, at high temperature (40°C). Non-entrapped enzyme lost its activity in less than 3 months when the entrapped form remains unaffected after 1 year.

Other ingredients can see their stability improving when entrapped in Glycospheres: other enzymes, vitamins, extracts ...
<table>
<thead>
<tr>
<th><strong>Product Name</strong></th>
<th><strong>Active Ingredient(s)</strong></th>
<th><strong>INCI Name</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Cn-HAHWS</td>
<td>Sodium Hyaluronate</td>
<td>Water (And) Pentylene Glycol (And) Palmitoyl Hydroxypropyltrimonium Amylopectin/Glycerin Crosspolymer (And) 1,2-Hexanediol (And) Caprylyl Glycol (And) Sodium Hyaluronate (And) Hydrogenated Lecithin</td>
</tr>
<tr>
<td>Gs-PCOg</td>
<td>Grape PCOs</td>
<td>Water (And) Palmitoyl Hydroxypropyltrimonium Amylopectin/Glycerin Crosspolymer (And) Vitis Vinifera (Grape) Seed Extract (And) Phenoxyethanol (And) Parabens (And) Hydrogenated Lecithin</td>
</tr>
</tbody>
</table>

**KFL-170-BR Charcoal + Scrub Face Mask**

**Part 1**
- Deionized Water: Water 56.40%
- Glicerina Bi-Destilada U.S.P.: Glycerin 20.00%
- Goma Xantana: Agar (And) Xanthan Gum 0.60%

**Part 2**
- Tersil CB: Terramater: Kaolin 5.00%
- CHARCOAL POWDER: Kobo Products: Charcoal Powder 2.50%

**Part 3**
- SunBoost ATB: Kobo Products: Argania Spinosa Kernel Oil (And) Tocopheryl Acetate (And) Bisabolol 5.00%
- Montana® 68: Seppic: Cetearyl Alcohol (and) Cetearyl Glucoside 2.00%
- Oliwax®: QuantiQ: Hydrogenated Olive Oil, Olea Europaea (Olive) Fruit Oil, Olea Europaea (Olive) Oil Unsaponifiables 1.50%

**Part 4**
- KoboScrub™ SD-200: Kobo Products: Silica 5.00%

**Part 5**
- Cn-HAHWS: Kobo Products: Water (And) Pentylene Glycol (And) Palmitoyl Hydroxypropyltrimonium Amylopectin/Glycerin Crosspolymer (And) 1,2-Hexanediol (And) Caprylyl Glycol (And) Sodium Hyaluronate (And) Hydrogenated Lecithin 1.00%

**Part 6**
- Cosmoguard® SL CP: Cosmotec: Phenoxyethanol (and) Ethylhexylglycerin 1.00%

**Manufacturing Procedure**
2. Add Part 2, mix until homogeneous and heat to 75-80 °C.
3. Combine Part 3 and heat to 75-80 °C.
4. Add Part 3 to Parts 1 and 2 and mix until homogeneous.
5. Cool batch to 50 °C and add Part 4. Mix until homogeneous.
6. Add Part 5 and mix until homogeneous.
7. Add Part 6 and mix until homogeneous.

**Description**
This Mask features KoboScrub™ SD-200, a natural scrubbing bead, which imparts exfoliation to the skin and CHARCOAL POWDER, a natural and highly porous powder, which absorbs impurities from the skin. Skin moisturizing ingredients are Kobo’s Glycosphere Cn-HAHWS, with encapsulated Sodium Hyaluronate, and SunBoost ATB which imparts excellent skin conditioning properties and emolliency, while soothing skin due to its Bisabolol and Vitamin E content.