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## PRODUCT DATA SHEET

### “Biosymph’s Japanning Compound”

#### Japanning History and Background:

Japan black (also called black japan or japanning, black) is common. Japanning is often assumed to be synonymous with black japanning. It is so named due to the history of black lacquer being associated in the West with products from Japan. It is a type of finish that originated as a European imitation of Asian lacquer work in the 18<sup>th</sup> century.

It is a heavy black lacquer or varnish similar to shellac and almost like enamel paint, which is made by coating objects with a preparation based on the dried sap of the *Toxicodendron vernicifluum* tree.

It is suitable to be used on many substrates but known especially for its use on iron and steel. It was first used on furniture and ornamenting wood and leather but was later used on small metal items. In the early 19<sup>th</sup> century, the term referred to the decoration and protection of the surfaces of metal articles with finishes hardened by oven heating.

Black japan, which was among the most widely used traditional japanning materials, is a mixture of molten asphalt, natural-resin varnishes, drying oils and turpentine, giving a clear, brownish undertone.

In modern times, the japanning compounds have largely been displaced by modern baking enamels. These are tough, durable coatings composed of pigments ground in synthetic-resin varnishes. The word ‘japan’ survives more actively in an altogether different product—japan colours. These are quick-drying, lustreless paints miscible with turpentine and universally sold in tubes and cans for sign painting and decorative work.

At a basic level, it is a mixture of linseed oil, turpentine, and a powdered or crystalline form of a specific type of asphalt product called Gilsonite. The European technique uses varnishes that have a resin base, applied in heat-dried layers which are then polished to give a smooth glossy finish.

Ironware was japanned black for decorative reasons. It was also used to render ironware rustproof and thus suitable for carrying water. A significant japanning industry developed shortly before tinplate became popular.

The technique was also developed to protect metal objects such as sewing machines, hand planes, builders' hardware, and in North America, watt-hour meters made before the mid-1930s. Later, it was used as an insulating film on transformer laminations. It was also used as the substrate for the tintype photographic process.

Until around the end of WWII at least, Stanley iron planes, along with most of their competitors, “painted” their plane bodies in a black tar-like lacquer. This gave a very durable finish. However, it did wear, generally as a result of planes rusting over many decades and lifting the japanning.

In fact, Ford Motor Company also used it as a finish on their automobiles in the early 20<sup>th</sup> century.

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**Description:**

Biosymph's Japanning Compound is a mixture of drying oils, low volatile solvents, and powdered Gilsonite. It is suitable for coating the surfaces of metal articles with finishes hardened by oven heating and curing by applying heat-dried layers.

This product has been designed to meet the needs of restoring old, and creating new, products using today's product formulations and raw materials, but still rendering the same finish and properties as intended by the original product. This state-of-the-art high temperature finish is performance oriented and environmentally compliant.

The japanned finish gives a high solids coating with a medium temperature resistance of up to 160°C. The chemistry used in this coating maximizes performance with reduced VOC content. For effective cross-linking of the paint to a metal surface, a staged bake cycle is recommended.

Biosymph's Japanning Compound has a special solvent package that aids application but has lower VOC than other standard high temperature coatings and paints.

Biosymph's Japanning Compound is specially formulated to be used on metal surfaces, planes and tools, vehicle engine components, arts & crafts, decorative items, and other applications that require a glossy black, med temperature, rust protected and hard finish.

*It is not recommended that any solvents or additives be added to this product. It can however be slightly thinned with 2-Butoxyethanol thinner if required.*

**Benefits:**

- Excellent film integrity and colour (to 160 °C)
- Provides excellent film quality
- The fully cured coating allows for cleaning with typical household cleaners without affecting the finish (not recommended to be used in a dish washer or very hot water)
- Lower VOC emissions
- Improved Mar Resistance

**Physical Properties:**

Viscosity ASTM D 9000cps 18-22 sec #3 Zahn Cup

High Gloss ASTM D 523 >70 GU @ 60 degrees

Cure Schedule staged, Air dry /1hr + 95 °C /1hr + 120 °C /1hr + 150 °C /1hr

Volume Solids 70-75%

Material VOC ASTM D-3960 504 g/l

Pencil Hardness ASTM D3363 3H+

1/8 Mandrel ASTM D 522 Pass

Salt Fog ASTM B117 80 Hrs. +

Adhesion ASTM D 3357 Pass 5B

QUV No gloss loss @ 350 hrs.

Rec. DFT (Aluminized) 12 -40 microns

Rec. DFT (Mild Steel) 20-50 microns

Clean-up mineral turpentine

Thinning up to 8% with 2-Butoxyethanol

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**Surface Preparation:**

Surface should be free from dust, oil, dirt and grease before applying japanning compound. Biosymph Ltd. recommends wiping down the article to be coated with IPA (Iso-Propyl Alcohol) before applying japanning compound.

**Application:**

This coating is easy to apply before backing and curing and can be applied using a brush. We recommend applying the compound in thin layers. Please see our recommended method below.

**The following coating/backing and curing method is recommended:**

1. After surface preparation and cleaning, avoid touching the substrate as fingerprints will be visible after backing. The use of latex gloves is recommended.
2. Apply a thin layer of the japanning compound. Hard-to-coat items can be done in stages, i.e. do the top layer first, then, once complete, do the other side by following the same steps as a guideline.
3. Leave the painted item for 1 hour to air dry before starting the backing cycle.
4. Bake in oven at 95 °C for 1 hour (two half-hour cycles if you use one of our supplied ovens as per the japanning kit). Leave to fully cool down to room temperature before next backing cycle.
5. Bake in oven at 120 °C for 1 hour. Leave to fully cool down to room temperature before next backing cycle.
6. Bake in oven at 150 °C for 1 hour. Leave to fully cool down to room temperature before next backing cycle.
7. Remove the item and inspect. Avoid touching the surface. Apply another thin layer of the japanning compound if required and repeat the above steps 3 to 7.

**Safety:**

This product contains solvents and/or other chemical ingredients. Adequate health and safety precautions should be observed during all storage and use. Use in a well-ventilated area.

**DON'T use your kitchen domestic oven to bake and cure the japanning compound** – use a separate dedicated oven as per our kit.

**Limitations:**

The technical data and suggestions for use in this product data sheet are currently correct to the best of our knowledge but are subject to change without notice. Because application and conditions vary, and are beyond our control, we are not responsible for results obtained in using this product, even when used as suggested. The user should conduct tests to determine the suitability of the product for the intended use. Our liability (including liability for breach of warranty, strict liability in tort, negligence or otherwise) is limited exclusively to replacement of the product or refund of its price. Under no circumstance are we liable for incidental and consequential damages.

*For more information or if you have any questions regarding special applications and require further advice,  
please do not hesitate to give us a call.*

biosymph  ™ Paints and Products		
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 Timber Stain & Preserver	 100% NZ KEEPING IT REAL	 Gilsolite Roof Sealer & Paint