Indigo is a “vat dye”, which means that it needs to be reduced to its water soluble leuco-form prior to dyeing. The reduced form is absorbed into the fibres, and when oxidized back to its blue form, remains within the fibres. During the simple manufacturing process, the reduction is achieved using glucose catalysts derived from bananas or henna and ash.

During the extraction stage, soaking, extraction and oxidation are achieved within controlled units, using an automated submerged pump without direct interference with the surrounding environment. Extract from limes is the only addition made, if required.

The indigo powder is preserved in a clean, dry environment. A quality assurance label is added to the finished product, referencing the details of the source and extraction date.

QUALITY ASSURANCE

Indigo quality is assured at every stage of its production. During cultivation, plants are irrigated with fresh water derived from rainfall harvesting using a drip irrigation system. Ensuring best management practices, plants are kept free of chemicals or pesticides and leaves are harvested and washed.

The Ghor el Safi Women’s Association is registered under Jordan’s Ministry of Social Development.
SAFI CRAFTS’ SPECIAL BLUE - INDIGO

The Ghor el Safi area was famous for the production of “Indigofera Tintoria” during the early Islamic period but, gradually, cultivation of the valuable plant was lost. The women revived the tradition and now farm indigo on 5 dunums of land. The valuable dye they extract is harvested and processed by hand, without the use of chemicals or pesticides.

“Safi Indigo” is a natural blue dye extracted from fresh indigo bearing crops that are being planted by the Ghor El Safi Women’s Association for Social Development. The natural dye is an organic compound with a distinctive blue color. Chemically is known as “Indigotin” of C16H10N2O2. Its chemical definition is 2,2’-Bis-(2,3-dihydro-3-oxoindolyliden) with CAS number 482-89-3, with three indices: 3H-Indol-3-one, 2-(1,3-dihydro-3-oxoindolyliden) and not pale) with potential high purity, distinctive blue color. It is insoluble in water and poorly soluble in most of the common solvents (e.g. alcohol, or ether). Indigo itself doesn’t exist in the leaves of indigo producing plants. Instead there are precursors. Indican, a colorless water-soluble derivative of the amino acid tryptophan, is extracted from the plant through the soaking process. In warm water, indican readily hydrolyzes to release β-D-glucose and indoxyl. Indoxyl forms leuco-indigo which is then oxidized to indigo through the exposure to air.

CHEMICAL Properties

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The indigo dye is extracted from the plants using simple tools, without any chemical additions. A specialized system processes the plants in three phases: soaking, extraction and aeration.

Plants are harvested in the morning and then submerged in warm water for one day. On the second day, the green extraction is pumped to the second tank, serving as a filtration process. This extraction is then aerated, using a submerged pump for 25-30 minutes to ensure the oxidation process is complete. The green extraction color transitions to dark blue and the leachate is kept undisturbed to ensure the precipitation of the indigotine. Finally, the concentrate is filtered and then air dried.

INDIGO PURITY

Generally, for indigofera tinctoria indigo, the purity ranges from 30 - 50%. Sometimes, when the leuco-indigo is not coagulated and precipitated easily, lime (Ca(OH)2) is used to flocculate the leuco particles. However, using too much lime can destroy the indigo quality and/or purity since it will be transferred into calcium carbonate (CaCO3) when it reacts with carbon dioxide. The output quality of the final indigo produced is above optimum (color is dark and not pale) with potential high purity, based on the dyeing process (through Vat) achieved by the Ghor El Safi Women’s Association.