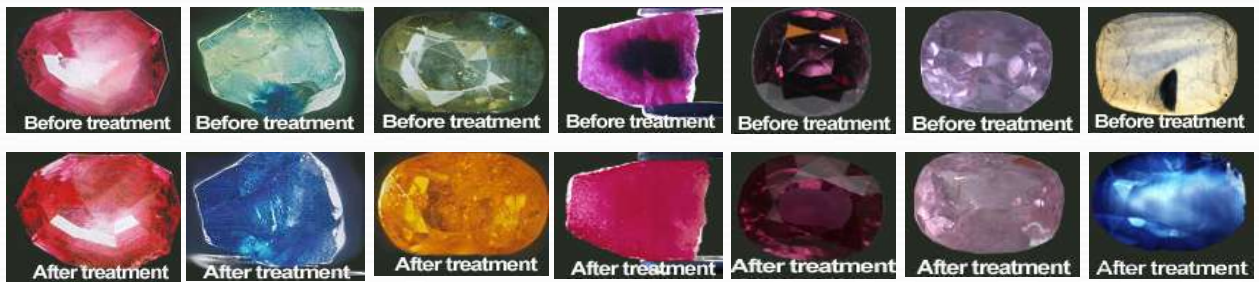


Gem Stone Oiling And Crack Filling Machine

BHFTECH is the largest Producer and Manufacturer of State Of Art High Pressure and Low Temperature Gemstone Oiling and Crack filling machine. The Gemstone crack filling machine is a compact and desktop model that works in any environment.

The BHFTECH Oiling apparatus is used to induce resins, oils, paraffin, oleoresins and combination of compatible liquid fillers of different viscosity into the surface reaching cracks and fissures on Sapphire, Ruby, Emerald, Tourmaline and many more. The above process helps to produce enhance clarity in the gemstone by hiding their imperfections by increasing their diaphaneity.



Parts Included in The Crack Filling machine.

- (1) Stainless steel 304 chamber to Load, heat and pressurize the stones.
- (2) Pressure gauge with ON -OFF Valve and pneumatic Fittings.
- (3) Temperature Controller with instruments
- (4) 2 Stage Vacuum Pump with Gauge, hose and Fittings

Features & specifications

- (1) It is a Bench top compact Model.
- (2) The Net weight of the machine is 45 kgs
- (3) The Recommended temperature range of operation is from 25 Degree C to 100 Degree C
- (4) Maximum designed pressure is 600 bar which is equivalent to 8700 psi
- (5) Loading capacity in one shift is 1000 carats of various gemstone of full load
- (6) The Chamber is made up of Heavy duty stainless steel material
- (7) 2 stage Heavy duty vacuum pump is also included in the package
- (8) Digital and Programmable control unit to control pressure and temperature using SSR and sensor
- (9) 500 watts heater is used inside the machine at 220 V AC and 50 HZ
- (10) 250 Watts of current is required to maintain 3800 PSI

Below is the example of TEMPERATURE-PRESSURE CORRELATION VALUES USING PARAFFIN OIL

75oC <-> 100 bar-1450 psi
80oC <-> 130 bar-1885 psi
85oc <-> 150 bar-2175 psi
90oC <-> 200 bar-2900 psi
95oC <-> 230 bar-3336 psi
120oC <> 260 bar-3771psi
150oC <> 300 bar-4351psi

NOTE: Above Pressure and temperature values shall vary depending on the load, amount and Type of the filler oil used in the BHFTECH Crack Filling Chamber, and other variable process parameters

1. What is the oiling and crack filling process followed in gemstones?

The oiling and crack filling process is aimed to reduce the visibility of surface reaching fissures, cracks, crevices and other dislocation features in the gemstone. thus the oil treatment enhances the clarity of gemstone and improves its overall appearance, and thus increases its price.

2. Which type of gemstones are suitable for oiling?

Rubies, Sapphire, Diamonds, Emerald, Opal, Turquoise, rhodochrosite. many other gemstone porous and non porous can be oiled. Many porous and non-porous gems may be oiled.

3. Which quality of the gemstone are oiled?

All qualities of gemstone can be subjected to the oiling treatment as long as the stone has surface reaching fractures

4. Are only cut and polished gemstones subject to oiling process?

Cut and polished gemstones and Rough Stones can be oiled in different ways

5. How significant is clarity improvement in the oiled gemstones.

The clarity can be improved from minor to minor to significant change and in some cases there shall be no improvement. Many clarity grades are published by various gem institute. These are subjected to experiments and research.

6. Is the oiling process in gemstones permanent?

The oiling process may be permanent if the hardener is used with fillers. The Gemstone should be re-oiled, if the oil is leaked from the Gemstone.

7. Is the oiling process in gemstones reversible?

The oiling process can be reversed based on filler material used. If Hardener is combined with filler, then it may be difficult to reverse or remove from the gemstone.

8. If the oiling treatment detectable?

The oiling treatment can be detected by expert Gemologist.

9. Are oiled emeralds and other oiled gemstones may change appearance (or even damaged) under normal "wear-and-tear"?

Yes. The Gemstone can get damage due to high heat Jewellery repairs, Steam Treatment, Solvents and other strong solutions. In this case the Gemstone has to be given to the lab for re oiling process.

10. What is the "ideal" oil to be used in oiling process?

These are few parameters for the perfect oil filler

SUBSTANCE: Natural organic

COLOR: Ideally colorless

DISPERSION: Should be low

REFRACTIVE INDEX: Most desirable is $n_D=1.56$

DENSITY: Not critical; it may range between 0.90 to 1.00 gr/cc

FLUORESCENCE: Inert, or very slightly faint fluorescence under LW or SW.

VISCOSITY: The viscosity of the oil may be high at 25 Degree C, as much as 2,000 cSt.; when the oil is heated to some temperature (to be determined according to its flash point) then its viscosity should be decreased dramatically (below 100 cSt -the lower the better). At cooling to 25oC its viscosity should be increased back to 2,000 cSt (with tolerance 10%).

SOLUBILITY: The filler should be insoluble in water; it may be slightly soluble in alcohol, ethers, etc.

STABILITY: Should be relatively stable, non-volatile, and non-drying upon exposure in normal lighting conditions.

ODOR/TASTE: Should be odorless, tasteless.

12. What type of "oil" can be used in the oiling process of emeralds and other gemstones?

Oils: Cedar wood oil, paraffin oil, clove oil, cinnamon oil, oil combos, other

Resins: Various types of resins

Oleoresins: Canada balsam (others classified as resin)

Synthetic epoxy resins: "Opticon" (or Resin 224)

Polymers: Various combinations of polymers

"Palma oil" a synthetic resin (known as Araldit 6010, Resin 828, or Epon 828) and it is not recommended because it turns whitish in few months;. "Gemarat & ExCel") is used extensively in the USA, Colombia and elsewhere, "Permasafe" and other fillers are also used..

13. Which is the best available natural oil used in oiling process?

Colorless Cedar wood oil is regarded as the best available oil in the market today. It is accepted in the international gemstone market. However, cedar wood oil is often mixed with other natural or synthetic substances.

14. Are dyes can be used in combination with the fillers?

Suitable dye can be mixed with compatible oil filler and be used in the oiling process. Most notable the "Joben" as standard practice of oiling emeralds in India.

15. What are typical pressure required for oiling emeralds?

Safe pressure for oiling zambian emeralds is about 3500 PSI. Increased in pressure can lead to expansion of fracture and break apart

16. Are the oiling treatment equipment complicated?

Oiling and crack filling machines manufactured by BHFTECH are safe and simple to operate. However it is the best Low Temperature and high pressure and sophisticated electro mechanical machine in the world.