

2014

DOSOR-X

SERIES **EASY**  
**DYEING**

TECHNOLOGIES FOR THE DYEING AND FINISHING MILLS

I.C.S. ITALIAN COLOR SOLUTIONS SRL



## **DOSOR-X**

### **Frequently Asked Questions (FAQs)**

#### **1. What is the Dosor-X machine?**

The Dosor-X machine is a new laboratory system aimed at preparing dyes solutions, dispensing recipes and managing both user-defined formula and outputted by the I.C.S. Color Matching TopDye© (or by third-party color matching software).

#### **2. Which kind of dispensing mode does the Dosor-X machine perform?**

The Dosor-X machine is developed to perform volumetric and gravimetric dispensing with a high dosage accuracy.

#### **3. How does the Dosor-X machine dispense batches?**

The Dosor-X dispensing head is equipped with a set of three fixed voluminous syringes that allow to dispense great amount of dye solutions at once. This circumstance strongly reduces the time spent by the machine to manage the whole recipe dosage process, while maintaining a high dispensing accuracy.

#### **4. How many syringes does the Dosor-X machine bear?**

Three syringes (pipettes) with high capacity. They are mechanically fastened to the dispensing head, and they are not left inside the dyestuff bottle.

#### **5. Can dyestuff residuals contaminate the syringes?**



The Dosor-X machine is equipped with a washing unit, which cleans all the syringes simultaneously removing from them any dye's residuals at the end of the dosage process. The washing process efficiently avoids any residual of air inside the syringe.

#### **6. How does the Dosor-X machine manage colorants with high density?**

The Dosor-X software is able to take into account the density ( $\text{kg/m}^3$ ) of each colorant. The user can specify additional information pertaining the selected dyestuff bottle such as its dilution (g/l), bottle capacity (ml), preparation and expiring date, and so forth.

#### **7. How does the operator manage the cleaning of syringes with dense colorants?**

The Dosor-X software allows the user to customize the washing efficiency according to the colorant type. The number of washing cycles and their temporal duration may be changed according to the selected colorant, and its features.

#### **8. Why are the syringes equipped with thin needles?**

The Dosor-X syringes are equipped with thin needles, which prevent single drop from falling down during the rapid movement of the dispensing head over the table. A needle thin enough punctures the top of the dye bottles.

#### **9. Why are the syringes made with stainless steel?**

The Dosor-X syringes are made from a stainless steel cylinder whose inner section is rectified with accuracy of 0.001 mm. Section constancy guarantees precise volumetric





dispensing, highly repeatable. This important feature is not allowed on systems employing plastic injectors, which therefore are not able to perform volumetric (i.e., fast) dosage. Plastic materials in the injectors can pollute the dispensed dyestuff.

**10. What is the maintenance rate for the syringes?**

Syringes don't need maintenance.

**11. What is the dosage accuracy of the Dosor-X machine during a gravimetric dispensing?**

Due to the high quality of the employed scale and an intelligent algorithm of recipe management embedded in our software, dispensing accuracy better than 1% is easily obtained during gravimetric dosages. An absolute standard deviation of 0.020 grams is obtained.

**12. What is the dosage accuracy of the Dosor-X machine during a volumetric dispensing?**

A powerful syringe's calibration is routinely performed in order to assure high dispensing accuracy during volumetric dosages. An absolute standard deviation of 0.027 grams is obtained.

**13. Why does the syringe's calibration play an important role?**

The Dosor-X software automatically performs the syringe calibration procedure in order to find the relationship between the dosed mass (as read by the scale) and the displacement of the syringe's piston. The repeatability of the calibration measurement is assessed. The



calibration assures high dosage accuracy during a volumetric dispensing.

#### **14. How many recipes can the Dosor-X machine manage?**

The Dosor-X machine is able to autonomously manage up to 24 recipes (including chemical products and water dosage) at once in volumetric mode. Moreover, a set of maximum 9 recipes can be dispensed in gravimetric mode. Recipe's dispensing can be grouped in programs, whose execution can be immediate or scheduled (delayed) for a selected date and time.

#### **15. What is the average dosage speed of the Dosor-X machine?**

The time spent by the machine to dispense in volumetric mode a program of 10 recipes is less than 4 minutes. The fast volumetric dispensing results roughly 3-time quicker than a gravimetric dosage.

#### **16. What is a criterion for selecting the volumetric dosage?**

The volumetric dosage is as accurate as the gravimetric one. The volumetric dosage is quicker than the gravimetric one. Hence, due to its high dosage accuracy and high dosage speed, it is suggested to systematically select the volumetric mode dosage. For the solution preparation and syringes calibration the gravimetric dosage is necessary.

#### **17. Why do the dyestuff bottles feature with a foam cap?**

The dyestuff bottles are equipped with a special foam (spongy) cap, which removes any dye's residual from the external surface of the syringe's needle (during the dyestuff collection). This prevents drops from falling down during the rapid movement of the





dispensing head.

**18. What is the maintenance rate for the foam caps?**

Temporal duration of the foam caps (their integrity and quality) is roughly 1 month for a daily utilization of the machine. It is suggested to periodically check the integrity of the caps.

**19. Can the Dosor-X machine dispense water?**

The Dosor-X machine is able to dispense water from three electro-valves providing excellent dosage accuracy. Hot and cold water are available.

**20. Which is the dispensing mode of water?**

The Dosor-X software automatically performs the calibration of the electro-valves aimed at dispensing water. This circumstance assures that water is accurately dispensed even without weighting the dosed mass with the scale.

**21. How many dyestuff bottles and chemical products can be managed by the Dosor-X machine?**

The Dosor-X machine can host up to 160 bottles including chemical products (auxiliaries). No limit are imposed over the number of auxiliaries bottles. The machine can be made with modular components, each of them can host up to 40 bottles.

**22. How does the operator arrange the chemical products?**

Chemical products (as the dyestuff) bottles are put by the user on the table of the Dosor-X machine. There is no specific spatial positioning as reserved for the chemical products. The



capacity of the chemical bottles equal the dyestuff bottle ones. Typically the bottle capacity is 1000 ml but it can be changed. The user can utilize a few bottles for the same chemical products.

#### **23. Can the Dosor-X machine prepare dyestuff solutions?**

The Dosor-X machine allows the user to prepare three or more dye solutions at high, medium and low concentrations.

#### **24. How does the user manage the preparation of the highest concentration solution?**

The solution at the highest concentration is prepared from dyestuff powder. The user manually weights the requested dyestuff powder mass using the scale installed on board of the machine, and then the software automatically completes the solution preparation by managing the agitation time, the addition of chemical products, and finally the dispensing of water to achieve the requested concentration (dilution). High dosage accuracy is guaranteed since the solution preparation program is carried out in gravimetric mode. During the concerned preparation, the dyestuff solutions can be heated by an external (and optional) device.

#### **25. How does the user manage the preparation of the medium and low concentration solutions?**

The entire procedure is automatically managed by the software, which graphically informs the user about the solution preparation progress.





**26. Can the Dosor-X machine prepare continuous pad batch (CPB)?**

A specific function has been embedded in the software in order to allow the user to prepare a recipe (batch) for the continuous pad batch dyeing. The new function allows the user to prepare batches with dyestuff at high concentration. The whole process is executed in the gravimetric mode in order to guarantee high accuracy of dosage. A user-friendly interface assists the user during each step of the preparation.

**27. Why is the Dosor-X machine equipped with a double-magnets agitators?**

The main table of Dosor-X machine hosts under the main table a system of rotating agitators made with two magnetic elements. These double magnetic elements make rotating a magnetic rod, which is put inside the dyestuff bottle. The external surface of this magnetic rod is made with a special coating that is resistant to the corrosive action of some dyestuff or chemical products. This system prevents sedimentation from occurring inside dyestuff bottles. As a consequence, there is no need for constantly heating the dyestuff solution.

**28. Can the (angular) speed of this agitation system changed?**

The speed of single agitators can't be changed. However, the Dosor-X machine can optionally host a single module of agitators that feature with a specific angular speed. The agitators typically rotate during the utilization of the machine. Their movement is interrupted only during the dyestuff collection and a gravimetric dosage.

**29. What is the Procsy-Service assistance tool?**





The Dosor-X software includes the Procsy-Service assistance tool by Internet that is an I.C.S. software utility aimed at controlling the desktop of the remote PC connected to the worldwide network. The Procsy-Service allows the I.C.S. technical staff to take the control of a remote PC once the customer has explicitly requested our help for fixing troubles arisen from the utilization of our software packages and automatic machinery. Therefore, the wasting of economic resources can be strongly reduced and the assistance service provided by the I.C.S. company surely improves with great benefit to the customer.

### **30. Which are the main advantages of the Dosor-X machine?**

- + The Dosor-X machine guarantees a significant improvement of the laboratory productivity and quality.
- + Gain of company profitability: up to 25%.
- + Operator mistakes characteristic of traditional manual dispensing are completely avoided.
- + Minimum installation and training costs: well-skilled people will help the user to correctly install the system and to become quickly operative.

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