



User's manual

Concentration & volume analyzer

CVA3



Cleaning fluid Concentration Measurement

Determination of the fluid level using a ruler



DCT Czech s.r.o., Tovární 85, 679 21 Černá Hora, Czech Republic
e-mail: dp@dct.cleaning, es1@dct.cleaning





TABLE OF AMENDMENTS

Date	22/01/2021	Prepared by	D. Prichystal	Checked by	P. Zouhar	Approved by	Z. Zukal
------	------------	-------------	---------------	------------	-----------	-------------	----------

Date	Version	Chapter	Description of Amendments	Author
15/09/2019	1.0		Creation of the Document	G. Nemeckova
21/01/2021			Update Document	P.Jez
28/06/2022			Update Document	P.Jez

This tester is designed for DECOTRON® CP 381 cleaning fluid

TECHNICAL DATA SHEET



DECOTRON® CP 381

Water-based cleaning fluid determined to remove flux residues from PBCs after soldering process. Can be used to clean misprints.

Ready-mix, intended for direct use.

Intended for use in all types of cleaning machines, mainly in the high-pressure spray-in-air cleaning machines.

Recommended areas for use

- Solder paste (soldered)**
- Flux wave, selective soldering, manual soldering (soldered)**
- Solder paste – PCBs misprints (unsoldered)**

Recommended cleaning technology

- High-pressure spray-in-air
High-pressure spray-in-air
High-pressure spray-in-air



Process table

Cleaning technology	Cleaning	1. rinse	2. rinse	Drying
High-pressure spray-in-air	Decotron® CP 381	DI water	DI water	Hot air

Product information

- Recommended for use in systems with closed cleaning processes and mechanical filtration
- The fluid is alkaline, rinse with DI water needed
- Eliminates potential foaming of DI water during the rinsing process of the cleaning machine
- Suitable for cleaning of flux residues of clean and no-clean lead and lead-free solder pastes
- No flash point, can be heated to increase the cleaning efficiency
- Environment-friendly, biodegradable
- Tenzide-free





Table of Contents

1	Introduction	4
1.1	Intended Use of the CVA3.....	4
2	Safety at Work, Fire Protection	5
2.1	Safety at Work.....	5
2.1.1	Safety Labels Used and Their Significance.....	5
2.1.2	Work with Hazardous Substances.....	5
3	Package contents	6
4	General Description	6
5	Measurement	7
5.1	Sampling.....	7
5.2	Addition of CVA3 test solution	9
5.3	Evaluation	10
6	Addition of DI water/cleaning fluid	12
7	Maintenance	12
8	Comments	13
9	Packing list	13
9.1	Parts of Delivery.....	13
9.2	Spare Parts.....	13

List of Figures

Fig. No. 1	Package contents of the CVA3	7
Fig. No. 2	Sampling step1	8
Fig. No. 3	Sampling step2	8
Fig. No. 4	Sampling step3	9
Fig. No. 5	Not correct (dark area under 100 ml line)	9
Fig. No. 6	Correct (line overlapping with dark area)	10
Fig. No. 7	Use the plug before mixing	10
Fig. No. 8	Mix the content by 3-4 cylinder turns	10
Fig. No. 9	Measured value	10
Fig. No. 10	CVA3_calculation.xlsx	12

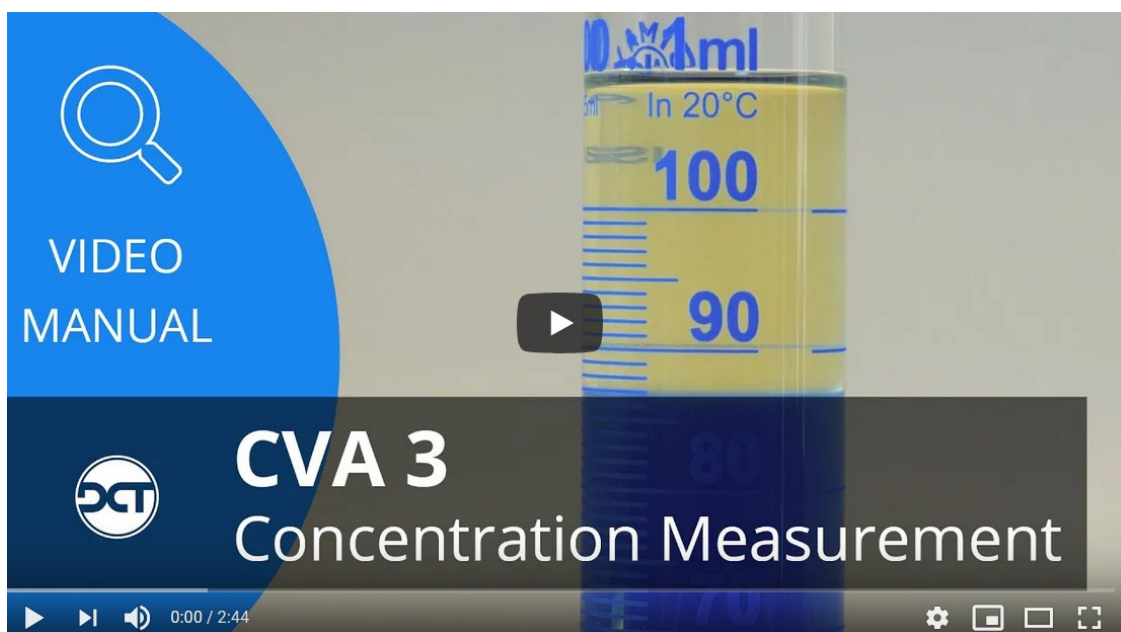


1 Introduction

The purpose of the User's manual is to inform the user of the properties, use and maintenance of device CVA3. The User's manual contains package contents, principle of operation and maintenance.

1.1 Intended Use of the CVA3

[CVA3](#) is intended for maintain correct concentration and volume of cleaning fluid in the cleaning machine.



2 Safety at Work, Fire Protection

2.1 Safety at Work

2.1.1 Safety Labels Used and Their Significance



Do not extinguish with water or foam!



Burn hazard!



Eye protection



Hand protection

! **Warning text**

Warnings and safety notices are introduced by an exclamation mark, using a larger red font.

2.1.2 Work with Hazardous Substances

- ! It is PROHIBITED to use in device flammable fluids of I, II and III flammability class.
- ! Use protective means, especially gloves and goggles or protecting shield, especially, when handling or refilling cleaning fluid.





3 Package contents

Package contents of the CVA3	
CVA test solution	10 pc
Sampling beaker	1 pc
Graduated cylinder for measurement	1 pc
Pasteur pipettes	6 pc
Protection case	1 pc

4 General Description

CVA3 Cleaning Agent Concentration Measurement is a simple method with only a few steps to measure concentration of cleaning agent in most water-based DCT cleaning fluids (developed for Decotron®).

After some time of cleaning fluid using in cleaning machine, it is usual that concentration is slightly changing mainly due to evaporation and transfer to rinse section. Concentration measurement is useful to ensure that cleaning fluid concentration is in recommended application range and the cleaning process is optimal, and together with volume measurement for determination of how much water or concentrate to add to reach desired concentration.

5 Measurement

5.1 Sampling



Fig. No. 1 Package contents of the CVA3

For sampling, follow steps below:

! Sampling must be done when the cleaning fluid is well mixed!

- Turn on cleaning cycle.
- After at least 2 minutes, the cleaning fluid will be thoroughly mixed, which you take into the prepared sampling beaker (min. 100 ml) after opening the back cover. See Fig. No. 2



Fig. No. 2 Sampling step1

- Pour (**mix well before!**) almost 90 ml into the graduated cylinder and left the fluid cool down to room temperature (20 - 25 °C, it lasts about 40 min. from 45°C).

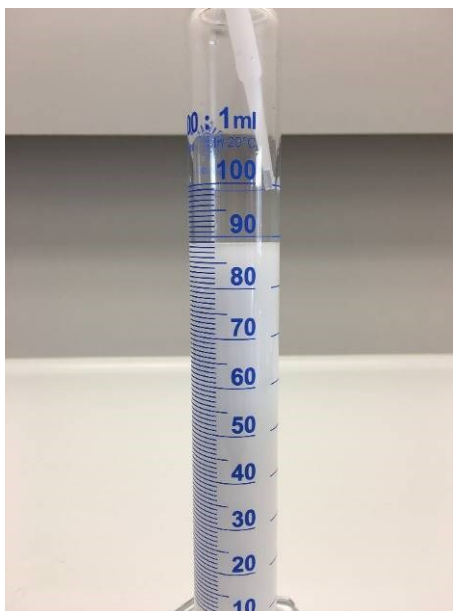


Fig. No. 3 Sampling step2

- Mix the rest in the sampling beaker and add the cleaning fluid with Pasteur pipette into the cylinder to reach exactly 90 ml.

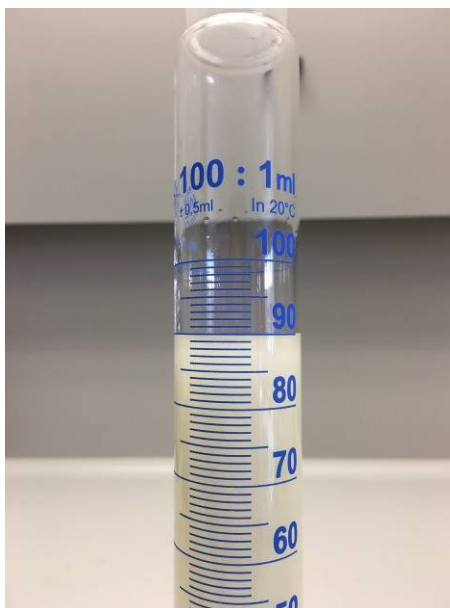


Fig. No. 4 Sampling step 3

5.2 Addition of CVA3 test solution

- Add the whole content of CVA3 test solution vial into the cylinder.

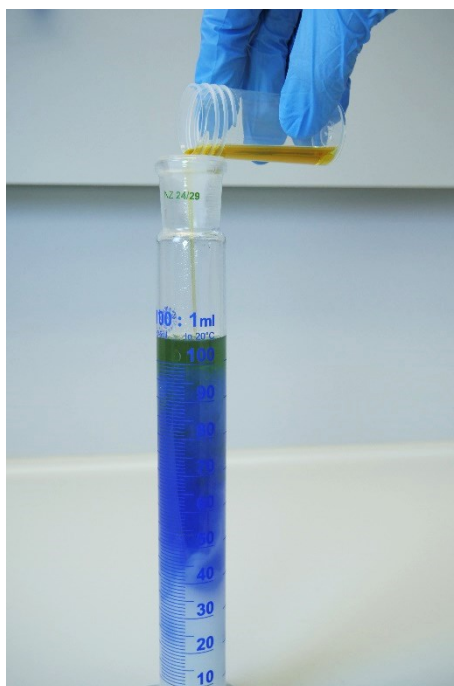


Fig. No. 5 Addition of CVA test solution

- Mix the content by 3-4 cylinder turns and pull out the plug for a while to get all the fluid inside the cylinder.

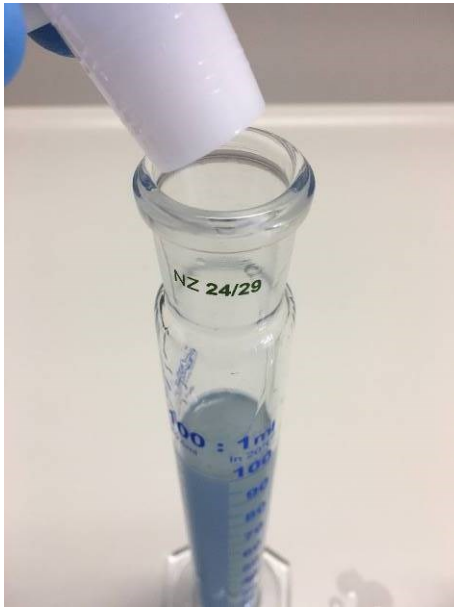


Fig. No. 6 Use the plug before mixing



Fig. No. 7 Mix the content by 3-4 cylinder turns

5.3 Evaluation

- After 10 min read the volume of lower phase (blue solution). Look at the cylinder perpendicularly in the height of phase separation. **Measure the exact value.**

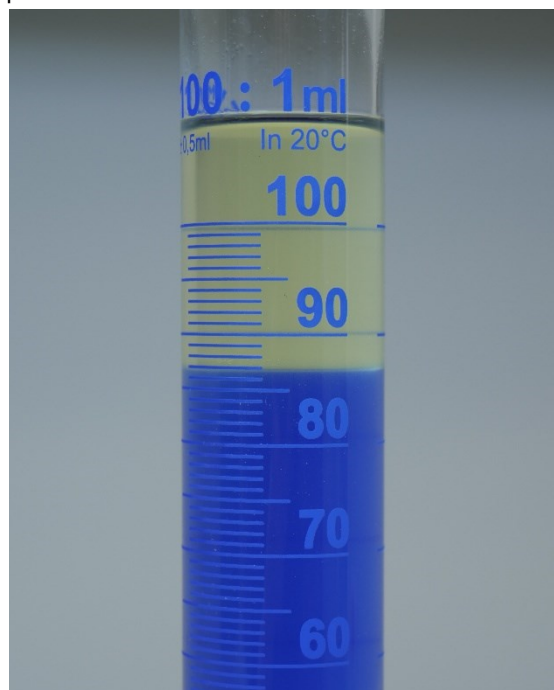


Fig. No. 8 Measured value

Measured value
= 87,0



- After entering the **volume 87,0 ml** into column "CVA3 - Lower phase volume" in excel sheet called "CVA3_table.xlsx", we get the concentration of cleaning agent which is **19,5 %** in this case.



- Then insert a stainless steel ruler (included in the CVA tester package) into the tank and measure the level. Also enter this measured value in the table, where the amount of fluid in the system will be calculated automatically.
- **Notice : Desired cleaning agent volume = 50 L tank + 20 L pipes and distribution system = 70 L**



CVA - Cleaning Agent Concentration Measurement			
Cleaning Agent:	Decotron CP 381		
Cleaning Machine:	InJet 388 CRD 2PR		
1)	Enter measured fluid level in the tank of the cleaning machine [cm]	Calculated actual cleaning agent volume [L]	CVA - lower phase volume [mL]
	13,0	53,1	87,0
2)	Enter desired values:	Desired cleaning agent volume [L]	Optimal concentration of Decotron [%]
		70,0	21,6
3)	Results:	To achieve desired concentration and volume	
	Actual CVA concentration of Decotron [%]	Add:	Add:
	19,5	4,8	12,1
		L of CP 381concentrate	L of DI water

Fig. No. 9 CVA3_calculation.xlsx

6 Addition of DI water/cleaning fluid

In "CVA3_table.xlsx" fill in actual volume of cleaning agent in cleaning machine. Read this value on the volume ruler that you put in the tank (when the machine is at a standstill). Desired value of volume in the machine is determined by machine type (for example 50 L for InJet 388 CRD) and optimal concentration of cleaning agent can be found in technical data sheet for each cleaning agent. As soon as all values in the table are filled, the information about actual cleaning agent concentration and an amount of concentrate or water to add, is obtained.

7 Maintenance

Clean all components (beaker, cylinder, plug, Pasteur pipette) with hot water, DI water and let it dry.

- ! Wet glassware may slightly influence the results.
- ! Use protective means, especially gloves and goggles or protecting shield





8 Comments

Average absolute standard deviation of concentration determination is 0,3 % (V/V) for 100 measurements. Maximum standard deviation is 1 % however it could be even higher in case of poor execution of the method.

! If the cleaning fluid is heavily contaminated (flux residues) and old, results may not be relevant.

In the case of measurement problems, contact DCT laboratory via e-mail:

- David Přichystal: dp@dct.cleaning
- Ester Šméralová: es1@dct.cleaning

9 Packing list

9.1 Parts of Delivery

Item Specification		Amount
1.	Package CVA3	1 pc
2.	Protection case	1 pc
3.	User's manual	1 pc

9.2 Spare Parts

Item Specification		Part number	Amount
1.	CVA3 test solution(set)	229000537	1 pc
2.	Glass Measuring Cylinder 100 ml	230850046	1 pc
3.	Measuring cup with funnel 250 ml	230830102	1 pc