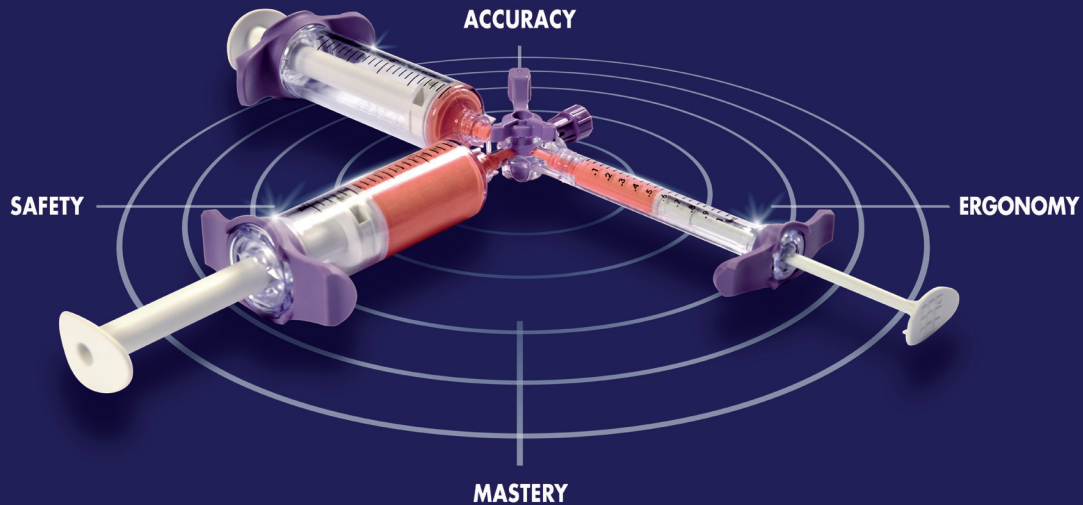


# VECTORIO®

cTACE Mixing & Injection System

## Vectorio® performance



UNBREAKABLE | USER-FRIENDLY | SHARP

Guerbet |



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# SAFETY

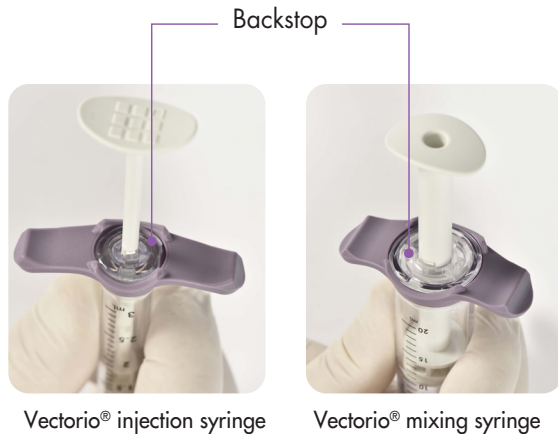
## Reduce the risk of drug exposure

### SYRINGES



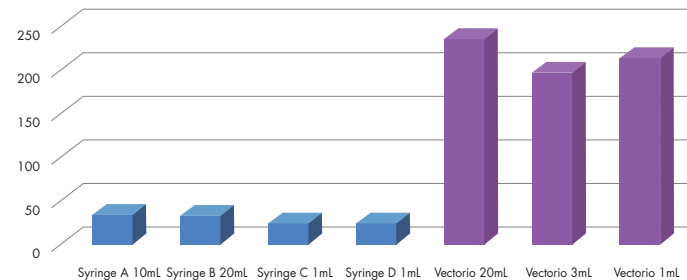
### Anti-ejection design in Vectorio® syringes

- The backstop in Vectorio® mixing & injection syringes avoids the exposure & ejection of plunger from the syringes



### Performance test of backstop

Traction on plunger (N)



### TEST RESULT\*

Backstops make Vectorio® syringes holding around **200 N** of traction. The standard syringes can just hold less than **35 N**.

**VECTORIO® SYRINGES CAN REDUCE THE RISK OF DRUG EXPOSURE & PLUNGER EJECTION**

\*Internal Test Report E20-13(2020)



# SAFETY

## Reduce the risk of drug exposure

20mL SYRINGE



Breakage/leak rate test – Vectorio® 20mL mixing syringes VS standard syringes

**Step 1**  
Contact with Lipiodol®

**Step 2**  
Apply pressure to syringes

**TEST RESULT\***

Syringe B  
(20mL)



1.5  
Hours



4.1  
bars

Vectorio® syringes  
(20mL)



24  
Hours



4.3  
bars

**60%**  
Breakage/leak rate  
after exposure to Lipiodol®

**0%**  
Breakage/leak rate  
after exposure to Lipiodol®

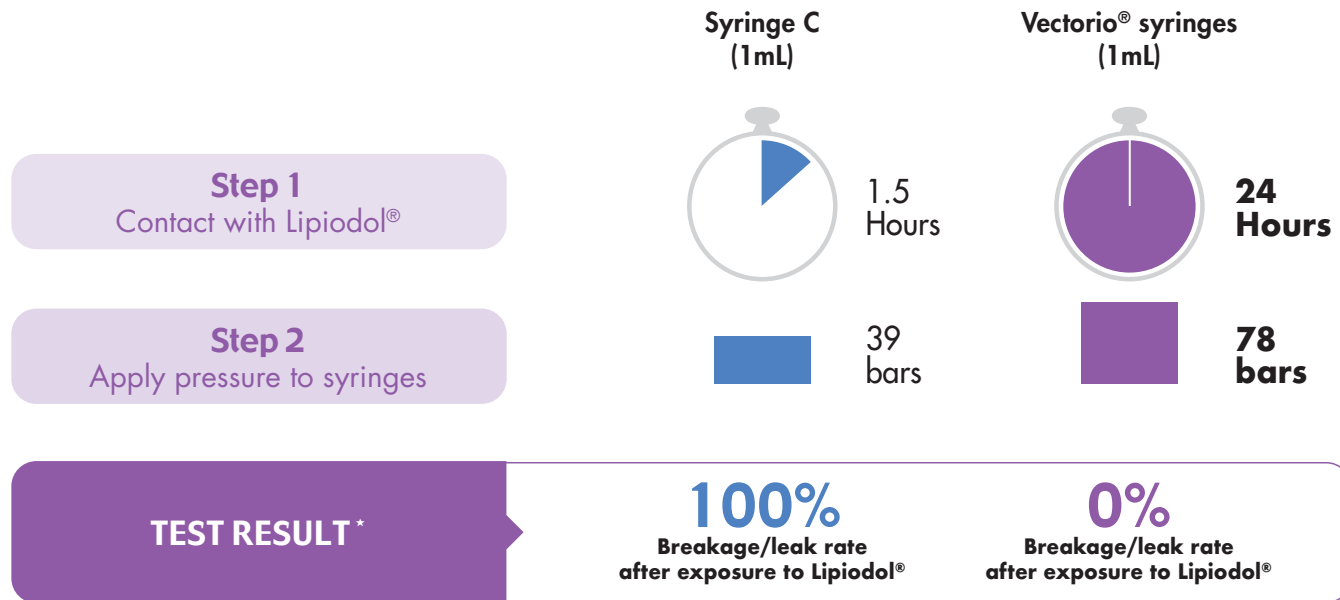
LIPIODOL® Composition: Ethyl esters of iodized fatty acids of poppy seed oil

\*Internal Test Report E20-13 (2020)

## 1 mL SYRINGE



### 🕒 Breakage/leak rate test – Vectorio® 1 mL injection syringes VS standard syringes



**COMPARED WITH STANDARD SYRINGES, NO BREAKAGE/LEAK WITH VECTORIO®**

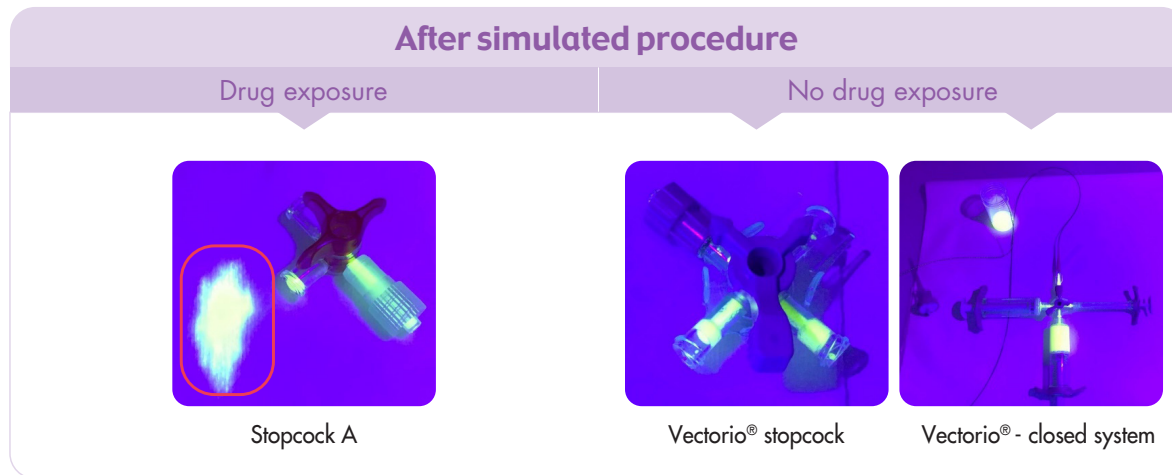


# SAFETY

## Reduce the risk of drug exposure

### Test by Fluorescein\*

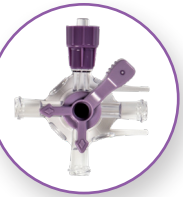
- **Vectorio® can reduce the risks of:**
  - ✓ Aseptic loss
  - ✓ Contamination of work environment
  - ✓ Air injection



### DESIGN OF VECTORIO® REDUCES THE RISK OF DRUG EXPOSURE DURING OPERATION

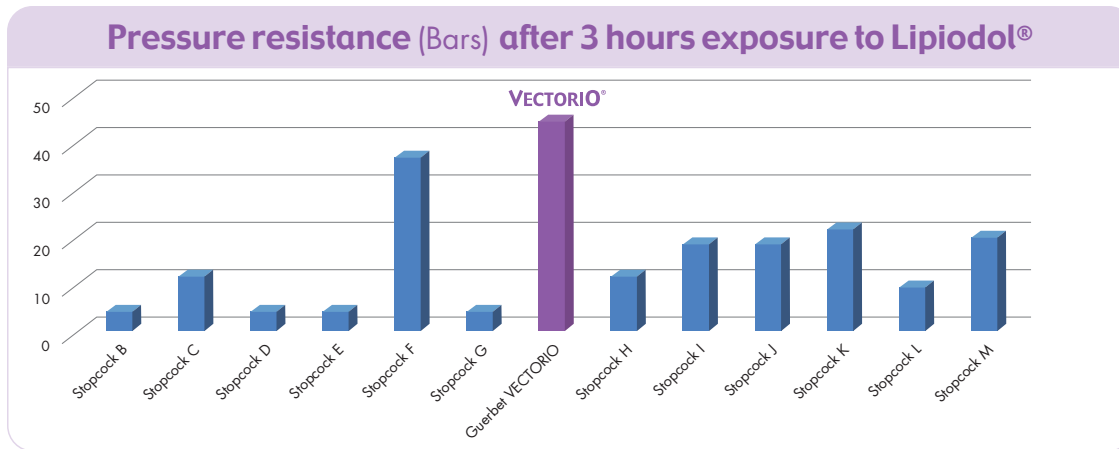
\*Internal Test Report DR\_18-00358-RAP (2018)

**STOPCOCK**



## Pressure resistance test – Vectorio® stopcock VS 12 other stopcocks

- Stopcocks are exposed to Lipiodol® 3 hours before the pressure resistance test



**TEST RESULT\***

Only Vectorio® stopcock can resist to pressure >38 bars without break.

**VECTORIO® STOPCOCK CAN RESIST HIGHER PRESSURE THAN STANDARD STOPCOCKS**

\*Internal Test Report E20-13 (2020) , IFU of Vectorio®



## SAFETY

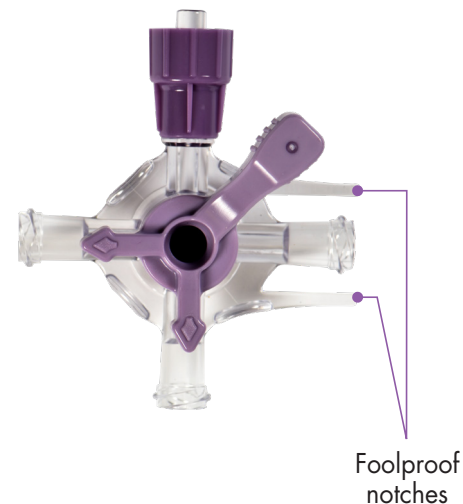
# Reduce the risk of handling errors during operation

FOR PATIENTS



### Avoid injection of non-mixed fluid to the patient

- **Involuntary injection can be avoided thanks to its design:**
  - ✓ Involuntary connection of 20ml syringes to micro-catheter is avoided thanks to the presence of foolproof notches providing a double warning (sonic & tactile)
  - ✓ The mixture can only be injected by 3ml or 1ml injection syringes into microcatheter
- **Avoids air injection**
  - ✓ Air bubbles are visible because of Vectorio® stopcock transparency



THANKS TO ITS DESIGN, VECTORIO® STOPCOCK AVOIDS INJECTION BY MISTAKE





# SAFETY

## Lipiodol® Specifications Maintained

FOR PATIENTS



- Lipiodol® standard production specifications: **Absorbance:** 420nm:  $\leq 0.60$  ; 460nm:  $\leq 0.50$   
**Acid value:**  $\leq 1.0\text{mg KOH/g}$

Lipiodol® batch #	Time of contact	Absorbance		Acid value ( $\leq 1.0\text{mg KOH/g}$ )
		420nm ( $\leq 0.60$ )	460nm ( $\leq 0.50$ )	
Lipiodol® batch 15LF604A	24H	0.25	0.14	0.7
Lipiodol® batch 16LU604A		0.19	0.10	0.5
Lipiodol® batch 14LU607A		0.28	0.17	0.6

TEST RESULT★

Lipiodol® remains under its specification limits after 24H of contact with Vectorio®



# USER-FRIENDLY & CONVENIENCE

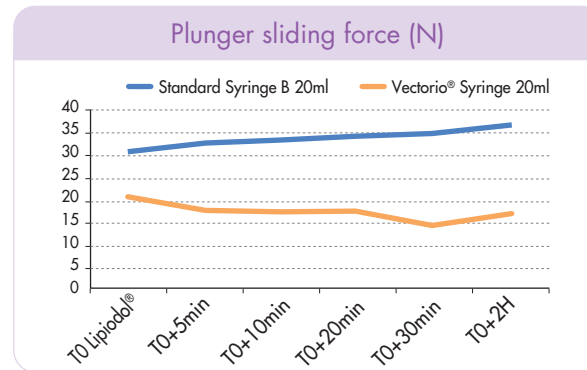
## Syringes easy to handle

20mL SYRINGE



### Plunger operating force required test – Vectorio® mixing syringes VS standard syringes

- Tests are performed after contact of syringes with Lipiodol®



#### TEST RESULT★

At the beginning of contact with Lipiodol®, standard syringe plunger sliding force is 50% higher than Vectorio®. Vectorio® syringe remains easy to use and constant within two hours, while standard syringes become more and more difficult to push as the contact time with Lipiodol® increases

**VECTORIO® SYRINGES ARE EASIER TO OPERATE THAN STANDARD SYRINGES**

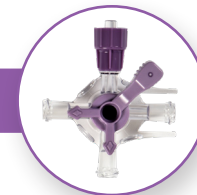
\*Internal Test Report E20-13 (2020)



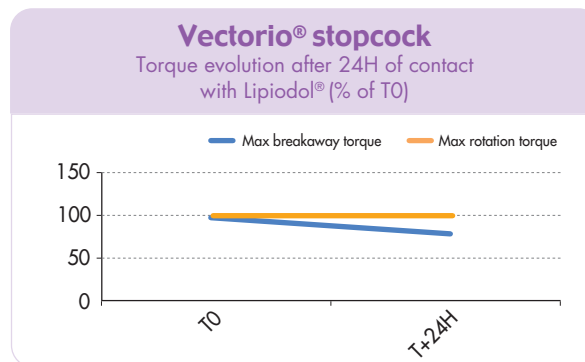
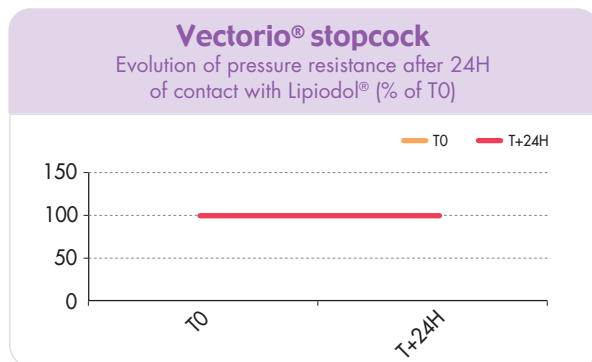
# USER-FRIENDLY & CONVENIENCE

## Stopcock easy to handle

STOPCOCK



### Pressure resistance & torque evolution test within 24H – Vectorio® stopcock



#### TEST RESULT\*

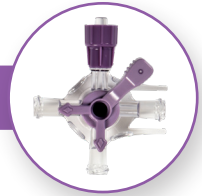
After 24H of contact with Lipiodol®

- ✓ No negative effect on pressure resistance of Vectorio® stopcock
- ✓ No negative effect on handling of Vectorio® stopcock

**AFTER 24H CONTACT WITH LIPIODOL®,  
NO IMPACT ON VECTORIO® STOPCOCK FUNCTION**

# WARNING – VECTORIO® stopcock

STOPCOCK



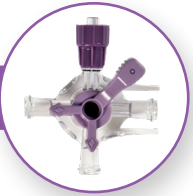
Vectorio® stopcock can resist **up to 38 Bars** of pressure with no risk of exposure\*.

The force applied by a human hand on a 1 mL syringe may exceed this limit, so pressure on the plunger should be moderate during the process. If drops appear in the center of the stopcock, a pressure exceeding the limit of 38 Bars occurred. Note that the stopcock is not broken and remains usable.

**IN CASE OF DROPS APPEARING IN CENTER OF STOPCOCK,  
THE PRESSURE SHOULD BE REDUCED AND INJECTION CAN BE FINALIZED**


\*IFU of Vectorio®

## STOPCOCK



Using the stopcock beyond its intended maximal pressure (P<sub>max</sub>) could cause leaks. These pressures could be particularly reached in the following cases (single or combined):

- Using both hands to push the 1 mL syringe plunger,
- Injection of a high viscosity solution,
- Using an occlusion or a small diameter microcatheter.

Internal pressure (bars)	Hand force equivalent on plunger (Kg)	
	Syringe 1mL	Syringe 3mL
25 bars	4.9	12.2
 <b>38 bars</b>	<b>7.8</b>	<b>19.5</b>

# VECTORIO® patents



- Syringe **backstop** in Vectorio® system **PATENTED**
- **Ergonomics** for Vectorio® syringes **PATENTED**
- The connection with Vectorio® **stopcock** **PATENTED**
- Vectorio® stopcock **safety belt** **PATENTED**



## TEST CONCLUSION\*

- ✓ **Vectorio® system - Safety for healthcare professionals & patients**
  - Reduce the risk of: drug exposure; plunger ejection; air injection; operation mistakes
  - Lipiodol® remains under its specification limits after 24H of contact with Vectorio®
- ✓ **Vectorio® system - Convenience**
  - Easy to use; no device breakage, 24H Lipiodol® resistance

**VECTORIO® IS HELPFUL FOR cTACE MIXTURE STANDARDIZATION**

\*Internal Test Reports E14-47 (2014), 2\_17\_00401-1.0 (2017), E20-13 (2020)

**Check summary of product information at:**



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