

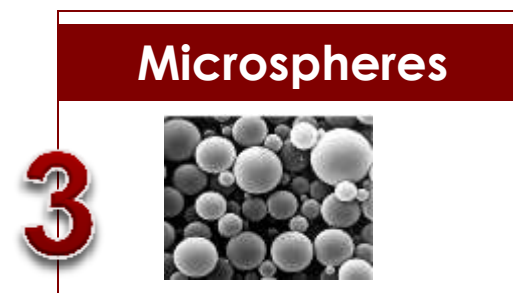


European Regulation applicable to the Diam Bouchage closures

June 2013



Composition of DIAM and MYTIK closures



Composition of DIAM and MYTIK closures



Cork

1



Council of Europe resolution : Good manufacturing practices.

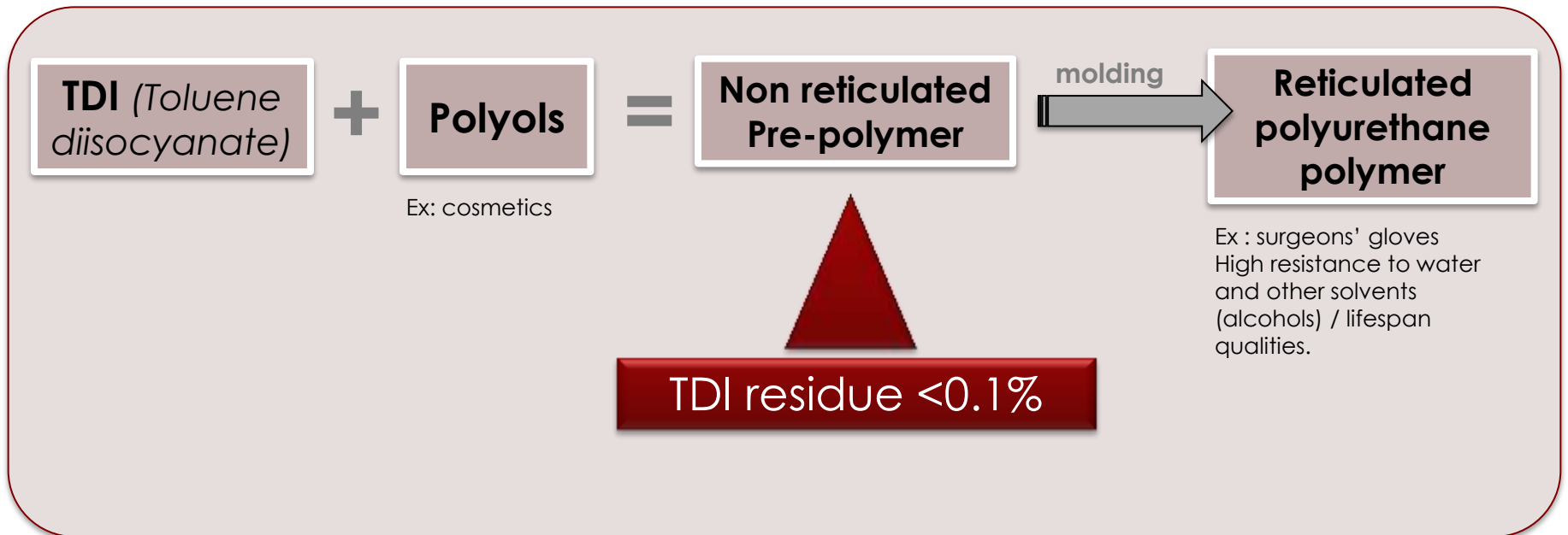
→ **There is no regulation concerning cork migrants...**

... and yet, some toxic molecules have been identified during the DIAMANT® cleaning

Examples

- *2-butenal (crotonaldehyde)*
- *2-hexanone (butyl methyl cetone)*
- *2-furanmethanol (furfurylic alcohol)*
- *2,5-hexanedione (acetylacetone)*
- *Decane*
- *1,4 Dichlorobenzene*

Composition of DIAM and MYTIK closures

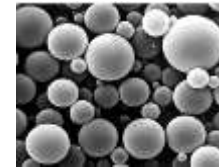


Composition of DIAM and MYTIK closures



Microspheres

3



ACN
(acrylonitrile)

Ex : numerous textile
fibers in contact with the
skin

+

MMA (methyl
methacrylate)

Ex : plastics with a medical
use (hip prosthesis...)

=

**Plastic
shell**

Microspheres Regulations



01 may 2011

01 january 2013

01 january 2016

Directive n° 2002/72/CE < 20 PPB (measurement uncertainty included)	Reg. UE n° 10/2011 < 10 PPB (measurement uncertainty excluded)
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Testing conditions : Directive n° 82/711/CEE Simulants : Directive n°85/572/CEE 10days/40°C/15% ethanol	Directive n° 82/711/CEE ou Reg. (UE) 10/2011 10d/40°C/20% ethanol ou 10d/60°C/20% ethanol	Reg. (UE) 10/2011 10d/60°C/ 20% ethanol
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Diam, Mytik and Altop closures are always in perfect compliance with the European regulation and we even comply with the future **2016 regulation**.

Analysis ACN content in the wine



1. **Analysis in real conditions** (bottles aged over several years at ambient temperature).

	10 bottles of Champagne (1)	2 Champagnes B. Salmon (2) (Mytik)	2 white wines (2) Bouzeron/ Bouchard (Diam 5)
 Pure environnement (France)	ND	ND	ND
 TNO triskelion (Netherlands)	-	ND	ND
 Fraunhofer (Germany)	-	ND	ND



(1) Disgorging between 2006 and 2011

(2) Removed from the market by bailiff

Analysis ACN content in the wine







2. Analysis on bottles (accelerated tests)

	Diam 5	Mytik
 PURE environnement Pure environnement (France)	ND	ND
 Fraunhofer Fraunhofer (Germany)	ND	ND

Analysis ACN content in the closure



3. Analysis by global maceration (accelerated tests)

	Diam 5	Mytik
 PURE environnement Pure environnement (France)	ND	ND
 TNO triskelion by TNO triskelion (Netherlands)	ND	ND
 IANESCO ianesco (France)	-	ND
 SINERGO Sinergo (Italy)	-	ND

« Worse Case » - ACN

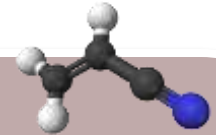


Let's take a 10 g Mytik closure with 5% microspheres (max.)

Compliant as $\ll 10$ ppb with a factor of 15

If the real contact surface is considered (4mm or 1/10 of the height) $\rightarrow 0.67/10 = 0.067$ ppb (facteur 150)

Calcul



- Microsphere weight = $10\text{g} \times 5\% = 0.5\text{g}$ of FG52 microspheres
- Max. weight of ACN residue $1\mu\text{g} / \text{gramme} \rightarrow 0.5\mu\text{g}$ of ACN

If all this ACN migrates to 75cl of wine $\rightarrow 0.5\mu\text{g} / 0.75 = 0.67\mu\text{g}$ or 0,67 ppb

Conclusion



There would have to be **over 15 Mytik closures dissolved** in a 75cl bottle to reach the maximum threshold (10 ppb) of the **2016 regulation**.

illustration