



# Part 2 – Product Realization using Quality by Design (QbD): Illustrative Example

## Addendum to Table 4.22

Risk assessment of the unit operations of drug substance and drug product processes when the control strategy is applied is shown in Table 4.22 as a function of the required CQAs from initial risk assessment Table 4.4. As expected, failure to achieve compliance with CQA acceptance criteria is assessed as low risk when the control strategy is applied.

In Table 4.22, “how risk reduction” is achieved is also summarised. The main sources of risk reduction are shown as use of control strategy elements derived from:

- Specifications and testing, and GMPs applied as part of a minimal or conventional approach. This is labeled as “C” in Table 4.22.
- Use of enhanced, quality by design approaches as discussed in this chapter in combination with application of specifications and testing, and GMPs applied as part of a minimal or conventional approach. This is shown as “C + E” in Table 4.22.

The original risk evaluation is shown in Table 4.4.

**Table 4.22: Risk Evaluation for PaQLInol Tablets after Application of the Control Strategy**

CQA/Unit Operations	Drug Substance					Drug Product					
	Dispense	Reaction	Work-up	Crystallize and HSWM	Dry	Dispense	Blend	Lubricate	Compress	Coat	Package
Appearance	C	C	C	C	C	C	C	C	C	C	C
Identity	C	C	C	C	C	C	C	C	C	C	C
Assay	C	C	C	C	C	C	C+E	C	C+E	C	C
Impurities	C	C+E	C	C	C+E	C	C	C	C	C	C
Uniformity of Dosage Units	C	C	C	C+E	C	C	C+E	C+E	C+E	C	C
Dissolution	C	C	C	C+E	C	C	C	C+E	C+E	C	C
Microbiology	C	C	C	C	C	C	C	C	C	C	C

**Note:** All risk assignments are now LOW. (See Table 4.4 for risk assignments before application of control strategies.)  
Types of Control Strategy Elements applied:  
C = Conventional Control Strategy Elements including GMP  
C+E = Conventional Control Strategy Elements including GMP, and Elements from Enhanced, QbD Approaches