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**ICH Q1F  
Stability Data Package for Registration APPLICATIONS  
in Climatic Zones III and IV**

**ICH Step 5**

**NOTE FOR GUIDANCE ON  
STABILITY DATA PACKAGE FOR REGISTRATION APPLICATIONS  
IN CLIMATIC ZONES III AND IV  
(CPMP/ICH/421/02)**

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<b>ICH Q1F</b> <b>Stability Data Package for Registration APPLICATIONS</b> <b>in Climatic Zones III and IV</b>
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## **1. INTRODUCTION**

### **1.1 Objectives of the Guideline**

This guideline describes an approach to broader use of the ICH guideline “Q1A(R) Stability Testing of New Drug Substances and Products” (hereafter referred to as the parent guideline) and outlines the stability data package for a new drug substance or drug product that is considered sufficient for a registration application in territories in Climatic Zones III and IV<sup>1,2</sup>.

### **1.2 Background**

The parent guideline describes the stability data package for the ICH tripartite regions (EC, Japan, and the United States), which are in Climatic Zones I and II. The parent guideline can be followed to generate stability data packages for registration applications in other countries or regions in Zones I and II. For territories in Climatic Zones III and IV, the data package as described in the parent guideline can be considered applicable except for certain storage conditions. An approach for classification of countries according to Climatic Zones I, II, III, and IV can be found in the literature<sup>3,4</sup>.

The World Health Organization (WHO) has published a guideline “Stability testing of pharmaceutical products containing well established drug substances in conventional dosage forms” (WHO Technical Report Series, No 863, Annex 5), updated in the Report of the thirty-seventh meeting of the WHO Expert Committee on Specifications for Pharmaceutical Preparations, Geneva, 22-26 October 2001. The WHO guideline describes stability testing recommendations, including storage conditions for all four climatic zones.

The stability testing recommendations in this guideline are based on the parent guideline and the WHO guideline. To harmonise with the long-term storage condition for Zones III and IV, the intermediate storage condition in the General Case for Zones I and II in the parent guideline is changed to  $30^{\circ}\text{C} \pm 2^{\circ}\text{C}/65\% \text{RH} \pm 5\% \text{RH}$ . This condition of  $30^{\circ}\text{C} \pm 2^{\circ}\text{C}/65\% \text{RH} \pm 5\% \text{RH}$  can also be a suitable alternative to  $25^{\circ}\text{C} \pm 2^{\circ}\text{C}/60\% \text{RH} \pm 5\% \text{RH}$  as the long-term storage condition for Zones I and II.

### **1.3 Scope of the Guideline**

This document is an annex to the parent guideline and recommends the long-term storage condition for stability testing of a new drug substance or drug product for a registration application in territories in Climatic Zones III and IV.

## **2. GUIDELINES**

### **2.1 Continuity with the Parent Guideline**

This guideline should be used in conjunction with the parent guideline and subsequently published annexes (Q1B, Q1C, Q1D, Q1E, Q5C). The recommendations in the parent guideline and annexes should be followed unless specific alternatives are described within this guideline. The following sections of the parent guideline can be considered common to any territory in the world and are not reproduced here:

Stress testing  
 Selection of batches  
 Container closure system  
 Specification  
 Testing frequency  
 Storage conditions for drug substance or product in a refrigerator  
 Storage conditions for drug substance or product in a freezer  
 Stability commitment  
 Evaluation  
 Statements/labeling

## 2.2 Storage Conditions

### 2.2.1 General Case

For the “General case” (as described in the parent guideline), the recommended long-term and accelerated storage conditions for Climatic Zones III and IV are shown below:

Study	Storage condition	Minimum time period covered by data at submission
Long-term	30°C ± 2°C/65% RH ± 5% RH	12 months
Accelerated	40°C ± 2°C/75% RH ± 5% RH	6 months

No intermediate storage condition for stability studies is recommended for Climatic Zones III and IV. Therefore, the intermediate storage condition is not relevant when the principles of retest period or shelf life extrapolation described in Q1E are applied.

### 2.2.2 Aqueous-based drug products packaged in semi-permeable containers

For aqueous-based drug products packaged in semi-permeable containers (as described in the parent guideline), the recommended long-term and accelerated storage conditions for Climatic Zones III and IV are shown below:

Study	Storage condition	Minimum time period covered by data at submission
Long-term	30°C ± 2°C/35% RH ± 5% RH	12 months
Accelerated	40°C ± 2°C/not more than 25 % RH ± 5% RH	6 months

As described in the parent guideline, an appropriate approach for deriving the water loss rate at the reference relative humidity is to multiply the water loss rate measured at an alternative relative humidity at the same temperature by a water loss rate ratio (see table below for examples). The ratio of water loss rates at a given temperature is calculated by the general formula  $(100 - \text{reference \% RH}) / (100 - \text{alternative \% RH})$ .

Alternative relative humidity	Reference relative humidity	Ratio of water loss rates at a given temperature
65% RH	35% RH	1.9
75% RH	25% RH	3.0

Valid water loss rate ratios at relative humidity conditions other than those shown in the table above can be used. A linear water loss rate at the alternative relative humidity over the storage period should be demonstrated.

### *2.2.3 Tests at elevated temperature and/or extremes of humidity*

Special transportation and climatic conditions outside the storage conditions recommended in this guideline should be supported by additional data. For example, these data can be obtained from studies on one batch of drug product conducted for up to 3 months at 50°C/ambient humidity to cover extremely hot and dry conditions and at 25°C/80% RH to cover extremely high humidity conditions<sup>2</sup>.

Stability testing at a high humidity condition, e.g., 25°C/80% RH, is recommended for solid dosage forms in water-vapour permeable packaging, e.g., tablets in PVC/aluminum blisters, intended to be marketed in territories with extremely high humidity conditions in Zone IV. However, for solid dosage forms in primary containers designed to provide a barrier to water vapour, e.g. aluminum/aluminum blisters, stability testing at a storage condition of extremely high humidity is not considered necessary.

### **Additional Considerations**

If it cannot be demonstrated that the drug substance or drug product will remain within its acceptance criteria when stored at 30°C ± 2°C/65 % RH ± 5 % RH for the duration of the proposed retest period or shelf life, the following options should be considered: (1) a reduced retest period or shelf life, (2) a more protective container closure system, or (3) additional cautionary statements in the labeling.

### 3. REFERENCES:

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