



# Catalysts by Evonik

## Handling Procedures for Precious Metal Catalysts (PMC)

### PMC Sampling and Weighing on Laboratory Scale

#### General Sampling Procedure

The catalyst amount used for a specific reaction is always calculated as dry substance. This is the most practical way to ensure that results are meaningful and comparable.

#### Dry catalyst

For a dry catalyst the weighing on laboratory scale is straightforward: after opening the bottle the dry catalyst is stirred slightly by means of a suitable device, e.g. a spatula.

**!** Use caution while stirring to avoid dust formation

For dry catalysts the amount of active catalyst equals the weight of the catalyst, e.g. 50 mg of catalyst on dry basis equals 50 mg catalyst taken out from the sample bottle. During the weighing process it is recommended to limit the time the catalyst is exposed to humidity, so that moisture from the air is not adsorbed. After the sample has been taken, the bottle should be closed tightly. To avoid any potential issues due to water adsorption on the dry catalyst, the user should re-measure the moisture content next time the sample is used.

This is especially advised in case the catalyst has been stored for a longer period of time.



Figure 1: stirring with spatula

### Wet type catalyst

The catalyst, even though it contains 50 to 60% water, behaves like a free flowing powder. Here the catalyst amount has to be corrected by the amount of water that is contained in the catalyst. The LOD (Loss On Drying) provided on the label of the sample should be used to calculate the amount of wet catalyst that needs to be charged into a reactor by the following formula:

Amount charged to reactor =

$$\frac{\text{Desired amount of catalyst on dry basis} \times 100}{100 - \text{LOD} [\%]}$$

For a wet type of catalyst the following procedures have been found useful:

Option 1: Before removing a sample from the bottle it is recommended to homogenize the catalyst by first shaking the bottle vigorously by hand (read-sorbing possible water droplets from the inside of the packaging).

Option 2: Opening the bottle and mixing the catalyst with a suitable device e.g. a spatula.



Figure 2: shaking

Both procedures ensure that the water is homogeneously redistributed within the catalyst. During repeated opening and closing of the bottle the moisture content might be different from the original moisture content that was reported on the label. In this case the moisture content has to be reconfirmed (drying to constant weight in a vacuum drying oven or IR dryer).

For any technical issues please contact Evonik Catalysts.

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