

## Objective of test:

**Wear analysis against customer shaft made of 1.4034**

## Client:

Name: Lutz Gansel

Team: iglidur® plain bearings

Date: CW 08/2013

## Order info:

Customer / No.: internal

Series / No: internal

Installation type:

Customer test: Yes  No

Development test: Yes  No

## Technical data

Force: 25 MPa

Run time: 100 hrs

Speed 0.012 m/s

Movement Rotating

Plain bearing SM-2023-20

Lubrication None

Plain bearing materials. iglidur® Z, iglidur® J350, iglidur® P210, iglus® development material, DU with PTFE layer

Shaft: 1.4034

## Experimental setup

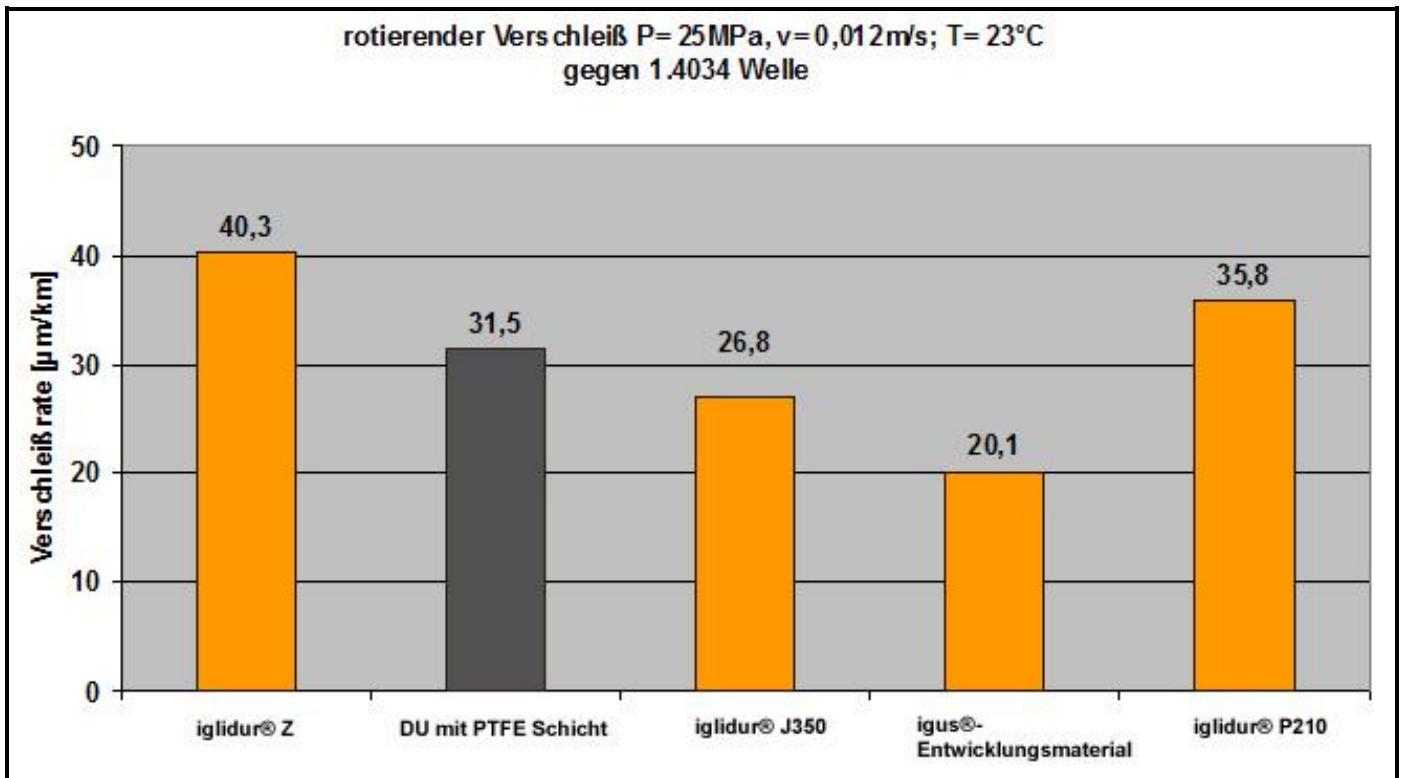
### Experimental procedure:

Shafts used by the customer were made from the material 1.4034. Different plain bearings were then tested against these shafts in order to obtain a better combination with the shaft material. Since the desired running time of iglidur® Z on a shaft made of 1.4034 steel could not be achieved in the application, we investigated this case in our test laboratory in order to find a more suitable iglidur® material. Diagram 1 shows the results of the wear analysis.

## Diagram 1

### For internal use only

The managing data show the results of the accomplished examinations. With all data it still acts neither around one or more warranties of certain characteristics around one or more warranties regarding the suitability of a product for a certain targeted application, since the examinations on laboratory conditions took place. The warranty of certain characteristics of the products and/or their suitability for a certain application requires writing in the confirmation of order. Finally we recommend user-specific measurements under genuine operating conditions.



## Result

The lowest wear rate could be achieved in combination with an iglidur® material still under development. The best currently available iglidur® material is iglidur® J350.

The two shafts from the tests with the DU or iglidur® J350 plain bearings are shown below.

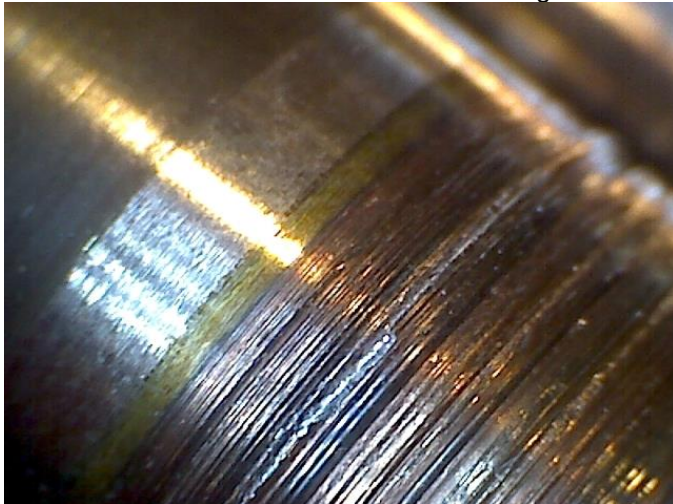


Diagram 2: DU with PTFE layer

After an identical running time, the shaft from the DU test shows a significant wear. Due to the abrasion of the PTFE layer of the plain bearing, the underlying bronze layer was exposed, which severely damaged the shaft later.

### For internal use only

The managing data show the results of the accomplished examinations. With all data it still acts neither around one or more warranties of certain characteristics around one or more warranties regarding the suitability of a product for a certain targeted application, since the examinations on laboratory conditions took place. The warranty of certain characteristics of the products and/or their suitability for a certain application requires writing in the confirmation of order. Finally we recommend user-specific measurements under genuine operating conditions.

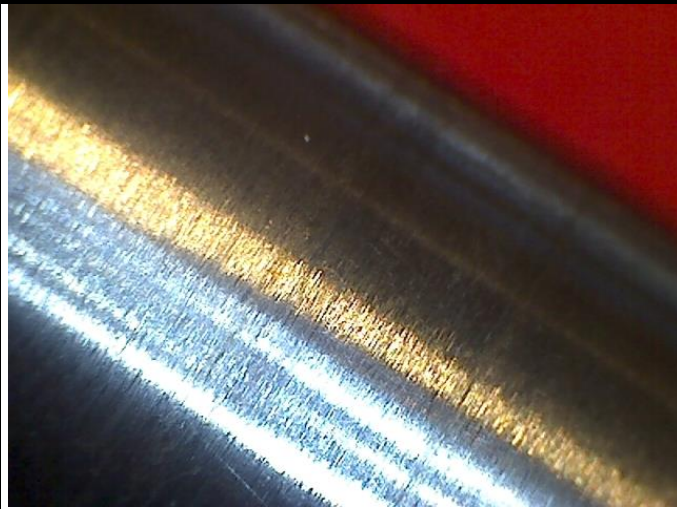


Diagram 3: iglidur® J350

The shaft in diagram 3 is exemplary for all shafts that have run against a polymer plain bearing. Here, only a very close inspection reveals a very light running track.

## Evaluation

iglidur® plain bearings are considerably more gentle on the shaft material. In the case of a damaged shaft as shown in figure 2, a strongly increasing wear rate is to be expected since the tribologically optimised system doesn't exist anymore.

On the basis of the tests carried out in the igus® laboratory, we recommend tests under application conditions with the igus® development material, iglidur® J350 and as reference, iglidur® Z.

<b>Name:</b>		<b>Date:</b>	CW21/2013
--------------	--	--------------	-----------

### For internal use only

The managing data show the results of the accomplished examinations. With all data it still acts neither around one or more warranties of certain characteristics around one or more warranties regarding the suitability of a product for a certain targeted application, since the examinations on laboratory conditions took place. The warranty of certain characteristics of the products and/or their suitability for a certain application requires writing in the confirmation of order. Finally we recommend user-specific measurements under genuine operating conditions.