

Plain bearing material E412

Features

The plain bearing material E412 is a special material for metal/polymer composite plain bearings and is particularly suitable for pump and oil-lubricated applications. The basis of the sliding layer is polytetrafluoroethylene PTFE.

Structure

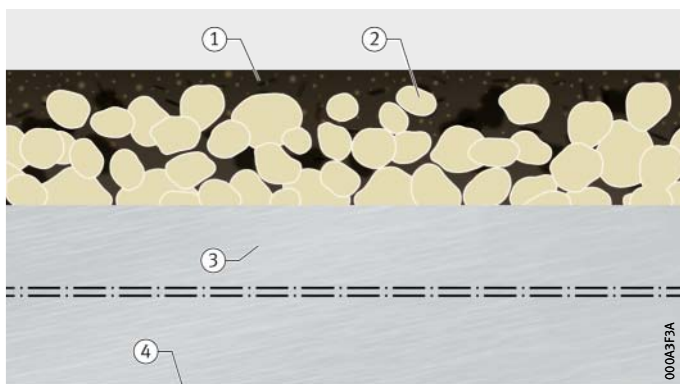
The three-layered material consists of a steel backing, an intermediate layer and a sliding layer, *Figure 1*.

The steel backing has a sintered porous tin/bronze sliding layer whose pores are filled with the dry lubricant of the running-in layer. The running-in layer made from polytetrafluoroethylene PTFE contains the anti-friction and anti-wear additives PTFE as well as chemically non-reactive additives.

As standard, the steel backing is protected against corrosion by a zinc coating, *Figure 1*. As an alternative to this tin layer, a copper layer is also possible by agreement for special parts.

- ① Running-in layer
- ② Sliding layer
- ③ Steel backing
- ④ Tin layer as surface protection

Bild 1
Maintenance-free
plain bearing material E412



Plain bearing material E412

Steel backing with tin layer

Chemical element	Steel backing		Anti-corrosion layer	Layer thickness
	Proportion of mass w_{\max} %	Hardness HB		
Carbon C	0,14	70 – 130	–	Dependent on bush size
Manganese Mn	0,7			
Phosphorus P	0,06			
Sulphur S	0,06			
Iron Fe	Balance			
Tin Sn (Copper Cu)	–	–	100	0,001 – 0,006

Sliding and intermediate layer

Chemical element	Proportion of mass w %		Layer thickness mm	
	Sliding layer	Running-in layer	Sliding layer	Running-in layer
Polytetrafluoroethylene PTFE	–	85	0,2 – 0,35	0,01 – 0,06
Fillers	max. 4	15		
Tin Sn	7 – 11	–		
Copper Cu	Balance	–		

Application

The material conforms to the regulations for lead-free plain bearings and is suitable for applications subjected to high loads with oil or media lubrication, see table. The special composition of the sliding layer gives the plain bearing material very good wear resistance. It is particularly suitable for pump and oil-lubricated applications.

Technical data

The plain bearing material E412 has the following mechanical and physical characteristics, see table.

Characteristics of E412

Characteristics			
Maximum pv value with media lubrication (oil)	pv	10 N/mm ² · m/s	
Permissible specific bearing load	Static	p _{max} 250 N/mm ²	
	Dynamic		140 N/mm ²
	Rotary, oscillating		60 N/mm ²
Permissible sliding velocity	With oil lubrication	v _{max} ≥ 5 m/s	
Permissible operating temperature	ϑ	–150 °C to +250 °C	
Friction coefficient (oil)	μ	0,01 to 0,2	
Operating life behaviour with:	Dry running	Good	
	Oil lubrication	Very good	
	Media lubrication	Good	

Schaeffler Technologies AG & Co. KG

Industriestraße 1–3 · 91074 Herzogenaurach
Germany · +49 9132 82-0
info.de@schaeffler.com · www.schaeffler.de/en

Georg-Schäfer-Straße 30 · 97421 Schweinfurt
Germany · +49 9721 91-0
faginfo@schaeffler.com · www.schaeffler.de/en

Every care has been taken to ensure the correctness of the information contained in this publication but no liability can be accepted for any errors or omissions. We reserve the right to make technical changes.

© Schaeffler Technologies AG & Co. KG · Issued: 2017, January
This publication or parts thereof may not be reproduced without our permission. PDB 54 GB-D