

Product Data Sheet

BIRKOSIT - Dichtungskitt ®

for extreme conditions of temperature and pressure

Description:

BIRKOSIT is a single-component, paste luting agent / sealing compound for industrial use wherever conditions of temperature and pressure at smooth, plane sealing surfaces (butt joints) make extreme demands on the quality of the sealing compound.



This applies, in particular, to the sealing of metallic joints: **steam and gas turbines**, compressors, pumps, housings, flange joints etc.

Technical data:

Temperature resistance:

Hot steam and air, hot and cold water, light fuel oils and lubricants, crude oil and natural gas at **up to 900 °C**.

Pressure resistance:

The excellent adhesion on sealing surfaces and butt joints guarantees a perfect seal **up to 250 bar**. The pressure resistance for flanges without sealing rings is **up to 450 bar** and even **up to 550 bar** for screw joints.

Plastic deformation:

Unlimited in its plastic workability so that, even under the most demanding conditions, the sealing film does not break, cf. temperature and pressure resistance.

Application areas:

Steam and gas turbines, power plants, gasworks and waterworks, oil refineries, smelting works, shipyards, paint and rubber manufacturing, chemical industry.

Working recommendations:

To be spread on the dry surfaces using a putty knife or rubber spatula. As the product doesn't cure but slightly changes its consistency, staying flexible and elastic, application on butt joints without time pressure is possible. And the product can be subjected immediately to working loads!

A small amount of linseed oil varnish may be added to improve the spreading properties.

Storage:

Unlimited storage life is BIRKOSIT when correctly stored. Its properties are stable and it is flexible in use. The tin should be properly closed if only part of the contents is used.

Packaging:

BIRKOSIT is packed and supplied in special 1-kg tins. Its colour is reddish-brown. For further properties of the product, see the materials safety data sheet 91/155/EEC, amended 93/112/EC and the storage life certificate.

As at October 2009.

This issue of the product data sheet supersedes back issues.

Storage life of BIRKOSIT - Dichtungskitt

Unopened tins

When correctly stored in the original packing, we guarantee a storage life of **5 years**.

Tins in circulation

Where tins are properly closed after partial use, we guarantee a storage life of **3 years**.

Service life

When used in accordance with instructions and with regular servicing as required for **steam and gas turbines**, we guarantee a service life for use on machined sealing surfaces (butt joints), **of 10 years**.

For high-pressure (H) turbines, we guarantee that the product will withstand hot steam, hot air, hot and cold water, light fuel oils, lubricants, mineral oil and natural gas at temperatures **up to 900°C** and pressures **up to 250 bar**.

Pressure resistance

The excellent adhesion on sealing surfaces and butt joints guarantees a perfect seal **up to 250 bar**. The pressure resistance for flanges without sealing rings is **up to 450 bar**, and even **up to 550 bar** for screw joints.

Indication of storage life

From 1 July 2002, the following additional information will be printed on the label:

- Filling date: ...	Unopened, useable until: 5 years
- Opened on: ... (entry by user)	Storage life after opening: 3 years



**Materials Safety Data Sheet according to 91/155/EEC (as amended by:93/112/EC)
modified by 93/112/EC and 2001/58/EC (as amended by: 93/112/EC)**

Date: 01.01.2010

1. PRODUCT AND COMPANY IDENTIFICATION**PART NUMBER:** 51001**TRADE NAME:** BIRKOSIT - Dichtungskitt ®**APPLICATION:** SEALING OF METALLIC JOINTS**COMPANY:** METRA INSTRUMENTS SA.**ADDRESS:** Chemin du Raffort 7 CH – 1083 MEZIERES**CONTACT: PHONE:** +41 (0) 21 903 0160 **FAX:** +41 (0) 21 903 0169**IN CASE EMERGENCY: PHONE:** +49 (0) 3581 750588 **EMAIL:** managemnt@a-i-schulze.com**2. COMPOSITION / INFORMATION ON INGREDIENTS**

Preparation on the basis of a modified organic resin and a mineral paraffin oil. The preparation contains inorganic and organic additives.

2.1 The product contains the following relevant components:**2.2** Characterisation of relevant ingredients according to 2.1:

CAS- No.	DESIGNATION:	EWG- No.	Index- No.	Symbols	R&S- phrases
8001-26-1	Linseed oil varnish -	-	-	-	-
1309-37-1	Synthetic iron oxide -	-	-	-	-

3. HAZARDS IDENTIFICATION

When working in compliance with the usual regulations for industrial hygiene, the handling of the product does not involve any special risk. If the usual regulations for waste disposal are observed (see Chapter 13) this product does not present any significant danger for the environment.

4. FIRST AID MEASURES**4.1** General comments: inhalation is not a primary mode of exposure. The measures mentioned under this heading are of a general nature.**4.2** Eye contact: with well opened eyelids, rinse the eye thoroughly and continuously, if irritation persists see a doctor.**4.3** Skin contact: remove the product, so far as possible, with a clean, soft cloth, wash skin areas thoroughly and continuously with soap and water.**4.4** Swallowing: have the person in question treated by a doctor if necessary.**4.5** Inhalation: get the person affected into fresh air, see a doctor if the person feels persistently nauseous.**4.6** Information for the doctor: no special treatments are known. Treat according to symptoms.

5. FIRE-FIGHTING MEASURES

Suitable extinguishing agents: CO₂, powder, foam extinguisher, water in a spray jet.

Extinguishing agents unsuitable for safety reasons: Water in a full jet.

Special protective equipment or measures during firefighting:

Due to the fact that the product is sold only in small packages, no special dangers are to be expected under normal circumstances. The product is flammable. During the combustion or thermal decomposition of the product, harmful and irritant gases and vapours are released.

Special protective equipment or measures during fire fighting:

The measures described in the following refer only to large fires. Cool containers exposed to fire with water with a spray jet. In case of fire, put on breathing apparatus that does not depend on circulating air and protective clothing. If possible, retain and dispose of water used for firefighting.

6. ACCIDENTAL RELEASE MEASURES

Collect undamaged small packages (cans, tubes, etc.). If larger product quantities leaked due to damage to small packages, wear protective equipment (see item 8.3) and close drains. Otherwise, take up any leaked/spilled remnants with a dry absorption agent (sand, dirt, a universal binder, etc.) and dispose of as described in item 13. Clean the floor thoroughly.

7. HANDLING AND STORAGE

7.1 Handling: process product only in well ventilated workrooms. Do not smoke while processing the product. Carefully observe the instructions for use.

7.2 Storage: the following measures relate to the bulk storage of the product. Store product in cool and dry conditions, in tightly closed original packages. In the event of leakage, use appropriate measures to prevent the product from contaminating the sewerage system or watercourses.

Do not store product close to food, beverages or animal fodder. Store product out of the reach of children. Observe the storage group for the storage of large product quantities or for bulk storage.

Storage group: 11 Storage group concept of the (German) Chemical Industry Confederation (1991).

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 Special Technical Installations:

Beyond point 7, no further measures are required.

8.2 Components subject to limit values at the workplace:

This product does not contain any components subject to limit values at the workplace.

8.2.1 Work hygiene and personal protection:

Do not eat, drink or smoke at the workplace. Avoid repeated/continuous contact with the product. Change dirty work clothes and clean thoroughly before reuse. Do not rub eyes with dirty hands. Wash hands after work and before using the toilet.

Respiratory protection: not required

Eye protection: protective goggles closed at the sides
(not obligatory, but recommended)

Hand protection: protective gloves made out of synthetic material
(not obligatory, but recommended)

Body protection: work clothes

9. PHYSICAL AND CHEMICAL PROPERTIES

Form: at 20 °C viscous

Colour: dyed

Odour: characteristic

9.1 Form			
no details given			°C
			°C
			°C
9.2 Density	(25°C)		approx. 1.1 g/cm ³
			g/cm ³
Filling density	(20°C)	not applicable	kg/m ³
9.3 Vapour pressure	(20°C)		< 1 hPa
	(°C)		hPa
9.4 Viscosity	(25°C)	no details given	
9.5 Solubility in water	(20°C)	practically insoluble	g/l
Fat-solubility		partially miscible with conventional, organic solvents	
9.6 pH (at g/l H₂O)	(20°C)	not applicable	
9.7 Flash point		no details given	°C
9.8 Ignition temperature		no details given	°C
9.9 Explosion limits	lower: - upper: -	no details given	
9.10 Partition coefficient n-octanol/water, log P:		not applicable	
9.11 Further Details			

10. STABILITY AND REACTIVITY

10.1 Conditions to avoid: the product is very stable at room temperature.

10.2 Materials to avoid: strong oxidising agents.

10.3 Dangerous decomposition products: during combustion/thermal decomposition of the product carbon monoxide, carbon dioxide and inorganic oxides are produced.

11. TOXICOLOGICAL INFORMATION

Where the usual regulations for the industrial work hygiene are observed the handling of the product does **not present any special risk** (Section 1).

LD/LC50 values that are relevant for classification:

Oral LD50 4986 mg/kg (rat)

12. ECOLOGICAL INFORMATION

Do not allow product to escape into environment. Decant and clarify polluted sewage before discharging into sewer system.

Water pollution classification: WGK 1 = less water pollution, agreement of German water right (according to the publication of VwVwS of 17 May 1999, leading over from omitted WKG 0)

13. DISPOSAL CONSIDERATIONS

Empty container (cans, tubes, etc.) thoroughly and pass them to the regular recycling procedure. Consumers may dispose of small quantities of product remnants properly by handing them over to the local hazardous waste institutions (hazardous materials vehicles). Professional users must dispose of the product according to the following disposal code.

Disposal key no: 559 07 cements and fillers, not hardened

14. TRANSPORT REGULATIONS

IMDG Code:	- UN No:	- ICAO/IATA:	-	
Dangerous goods	- regulation for roads / RID/ADR:	- goods regulation for rail: ADNO:	-	
KEMLER FIGURE:	- MFAG:	- EMS:	-	
TREMCARD:	- IATA-PAGE:	- PACKAGING GROUP:	-	
DANGER NOTE:	- MARINE-POL:	- IMDG-LABEL:	- SKZ-NO:	-

This product is not subject to the dangerous goods transport regulations.

15. REGULATORY INFORMATION

This product is **not a dangerous working material** according to the dangerous material decree and the relevant EU Directives (67/548/EEC and 88/379/EEC), as respectively amended at the time of drawing up the safety data sheet.

16. OTHER INFORMATION

Section 1: Derivation from the safety data sheets of the individual components. The following items in the data sheet were changed with respect to the MSDS of NOVEMBER 03, 2003:

items 1, 2, 9, 11, 12, 13, 14 and 15

Principal area of application in steam turbines and gas turbines

Jan 2010

Siemens Steam Turbine SST-3000, SST-5000



any excess **BIRKOSIT - Dichtungskitt®** will be squeezed out



to step 3



grinding of joint surfaces
[depending on the precision not necessary]

Example SIEMENS Steam Turbine SST-6000



Application guidelines for the product, **BIRKOSIT - Dichtungskitt®**

Pressure/temperature conditions in the turbines

[individual pressure zones]

- > defined by type of turbine
- > generally, the critical point for pressure is the turbine inlet
(~70 bar)
- > generally, the critical point for temperature is the turbine inlet
(~500 Grad)
- > special case, turbine type "H" - 'pushed up':
turbine inlet is critical point
(~120 bar/ 600 degrees) -> e.g. HNG 4056

[our product is also used]

Relevant working steps

- 1) Internal sealing surfaces (joints) - guide blade carriers

[**BIRKOSIT - Dichtungskitt®** is applied with a brush]

-> consumption on average 2 to 3 tins

[WORK STEP 2 DEPENDS ON THE TYPE OF TURBINE]

- 2) Squeezing off the turbine surfaces /pressure stage

[**BIRKOSIT - Dichtungskitt®** is used together with the gasket paper and applied with a spatula]

-> consumption on average 10 to 20 tins

- 3) Closing the casing halves of the pressure stage

[apply **BIRKOSIT - Dichtungskitt®** to the joint surfaces thinly with a brush]

-> consumption on average 10 to 20 tins [individual pressure zones]

Individual steps in stage 3

- 1) Remove the hard top layer [protective layer] from the tin with a spatula.
- 2) Mix in linseed oil until a proportion of 1/10 is reached.
- 3) Apply to the joint surfaces with a brush.
- 4) Spread thinly.
- 5) The joint surfaces must be dry and machined [and rubbed down] to the required precision.
- 6) Close the pressure stage casing halves.
- 7) **BIRKOSIT - Dichtungskitt®** WILL FILL ANY SURFACE IRREGULARITIES.
- 8) Any excess **BIRKOSIT - Dichtungskitt®** will be squeezed out of the joint.

Important note on work step 2

- Preparing the surfaces using engineering blue

-> apply blue to sealing surface of one casing half

-> match up second half (with blue print) exactly

[work unevenness of first half into second]

Important note on work step 3

The joint surfaces are milled with high precision [Ra = 0.8 to 1.2 µm].

In order provide the **BIRKOSIT - Dichtungskitt®** with an optimum adhesion surface, the joint surfaces are **briefly** ground using a finishing sander with 60-80 grade disc [where manufactured with sufficient precision not necessary].

Reconditioning intervals

- between 5 and 10 years

[or calculated in operating hours]

Product use by end-customers

- between 3 and 10 years

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Tins in circulation

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Service life

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The SST-6000 features a barrel-type high-pressure (H) cylinder, an intermediate-pressure (I) cylinder and up to 3 double flow low-pressure (L) cylinders for 50 and 60 Hz.

It is typically operated in conventional steam power plants and enables a power output up to 1200 MW.

Output Range

for Conventional Steam Applications

- Up to 1200 MW **Main Steam**

Temperature:

- Typically 600 °C / 1112 °F

Pressure:

- Up to 280 bar/ 4061 psi

Reheat Steam Temperature:

- Typically 610 °C / 1130 °F

Exhaust Areas

- 50 Hz: 5 m² to 16 m²

27.5 inches to 56 inches*

- 60 Hz: 3.5 m² to 11.1 m²

22.9 inches to 47 inches** Last blade profile