

PRODUCT INFORMATION

CHEMOLINE 4 B

PRODUCT DESCRIPTION

CHEMOLINE 4 B is a self-vulcanising soft rubber lining based on bromobutyl rubber (BIIR).

FIELDS OF APPLICATION

CHEMOLINE 4 B is used for the fworkshop and on-site rubber lining of steel components exposed to chemicals. The fields of application range from the chemical, chlorine, fertiliser, phosphoric acid, steel and power generation industries to ore processing and environmental protection.

Typical applications are the linings of storage and agitator tanks, crystallisation and condensation reactors, thickeners and absorbers, process tanks, clean gas ducts and chimneys of flue gas desulphurisation plants.

FEATURES

- Very good chemical resistance to mineral acids, bases, polar solvents and salt solutions
- Excellent diffusion resistance to sulphur dioxide and saturated water vapour
- High continuous operating temperature
- On-site rubber lining of metallic substrates

CHEMICAL RESISTANCE

Requests for chemical resistance can be sent to awt@tiptop-elbe.de.

SUBSTRATE

Substrates are components made of non-ferrous metals, cast materials, unalloyed or austenitic steel. The components must be designed and manufactured in accordance with EN 14879-1. The substrate must remain dry during application.

SURFACE PRE-TREATMENT

EN14879-1 and the TIP TOP specification "Corrosion protection of metallic components" must be observed. Unalloyed steel must be blasted to "Near White Metal" in accordance with EN ISO 12944-4. A surface preparation degree of SA 2½ according EN ISO 8501-1 and a roughness degree "Medium (G)" according EN ISO 8503-2 must be achieved. A minimum roughness depth of $Rz \geq 50 \mu\text{m}$ is required. After blasting, the formation of new rust should be prevented by suitable measures (e.g. priming).

CLIMATIC CONDITIONS

During application, direct or indirect sunlight must be avoided and the climatic conditions specified in the application instruction must be observed. To avoid condensation, a dew point difference of at least 3K must be maintained. During application, the materials must never be colder than the ambient temperature at the workplace.

ADHESIVE SYSTEM

CHEMOLINE 4 B is bonded to steel with **PRIMER HG 1 & PRIMER HG 2** in combination with **ADHESIVE TC 5000**. Alternatively, **PRIMER PR 500-1** und **PRIMER S 500-2** can also be used in combination with **ADHESIVE TC 5000**. The adhesive system requires a temperature of $\geq +45^\circ\text{C}$ to achieve final strength.

In special cases and only after consultation with TIP TOP, the cold bonding system **PRIMER PR 304** in combination with **CEMENT BC 3004** with 4% **HARDENER E-40** can also be used as an alternative. The rubber lining may then only be used up to a maximum continuous operating temperature of $+90^\circ\text{C}$.

APPLICATION METHOD | CONSUMPTION | OPEN TIME

Coat	Product	Application	Consumption	Min. Open Time	Max. Open Time
1. Coat steel	PRIMER HG 1	Roll / brush	ca. 150 g/m ²	2 h	14 d
2. Coat steel	PRIMER HG 2	Brush	ca. 150 g/m ²	1 h	7 d
3. Coat steel	ADHESIVE TC 5000	Brush / roll	ca. 150 g/m ²	4 h	7 d
4. Coat steel	ADHESIVE TC 5000	Brush	ca. 150 g/m ²	1 h	3 d
1. Coat rubber	ADHESIVE TC 5000	Brush	ca. 150 g/m ²	1 h	1,5 h

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Always observe the current application instruction before using the products. The specified open times apply to a temperature range of +20°C to +25°C.

CLEANING

All equipment should be cleaned with **SOLVENT CF-CE** immediately after use. The equipment should be cleaned in a well-ventilated area.

VULCANISATION

Location	Vulcanisation
On-site	Self-vulcanisation at ambient temperature (T > 25°C) within 3 - 4 months
On-site	At higher operating temperatures and vacuum, vulcanisation is carried out under pressure using steam, hot air or hot water. For vacuum loads, the rubber coating must be fully vulcanised before commissioning
On-site	Vulcanisation with medium under operating conditions
Workshop	Vulcanisation in an autoclave under pressure using hot air or steam

When vulcanising the product, the information in the application instruction must be observed. The vulcanisation methods on-site may only be used after consultation with TIP TOP.

SPARK TEST

The spark test is carried out in accordance with EN 14879-4. Only the Elmed Isotest IIRT, Isotest 3P or Isotest Inspect 35 high-voltage testers and the Wegener WEG 20, WEG 22 or WEG 100 test pistols may be used. Multiple tests can reduce the dielectric strength of the lining materials and must be taken into account by reducing the test voltage by at least 1 kV/mm. Special agreements are required for linings that have already been in operation.

CHEMOLINE 4 B	Test voltage	Max. Test voltage
unvulcanised & vulcanised	4,0 kV/mm	20,0 kV

APPROVALS AND TEST CERTIFICATES

General technical approval **Z-59.22-159** of the German Institute for Building Technology (DIBt) for steel storage tanks.

DELIVERY FORM | MINIMUM SHELF LIFE

Product	Packaging	Article No.	Storage temperature	Min. shelf life
ADHESIVE TC 5000	4.5 kg	525 2389	5 - 25°C	12 Mon
ADHESIVE TC 5000	9 kg	525 2286	5 - 25°C	12 Mon
ADHESIVE TC 5000	25 kg	525 2224	5 - 25°C	12 Mon
ADHESIVE TC 5000	182 kg	525 2293	5 - 25°C	12 Mon
PRIMER HG 1	4.5 kg	525 3050	5 - 25°C	12 Mon
PRIMER HG 1	9 kg	525 2956	5 - 25°C	12 Mon
PRIMER HG 1	25 kg	525 2963	5 - 25°C	12 Mon
PRIMER HG 2	9 kg	525 2987	5 - 25°C	12 Mon
PRIMER HG 2	25 kg	525 2994	5 - 25°C	12 Mon
SOLVENT CF-CE	10 l	595 9163	5 - 25°C	60 Mon

Dimensions	Article No. (DIN*)	Article No. (MIN)	Storage temperature	Min. shelf life
2 mm x 1100 mm x 10000 mm	528 2933	-	≤ +5°C ≤ +25°C	6 Mon 1 Mon
3 mm x 1100 mm x 10000 mm	528 2971	20000032	≤ +5°C ≤ +25°C	6 Mon 1 Mon

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DELIVERY FORM | MINIMUM SHELF LIFE

Dimensions	Article No. (DIN*)	Article No. (MIN)	Storage temperature	Min. shelf life
4 mm x 1100 mm x 10000 mm	528 3011	20000033	≤ +5°C ≤ +25°C	6 Mon 1 Mon
5 mm x 1100 mm x 10000 mm	528 3059	20000034	≤ +5°C ≤ +25°C	6 Mon 1 Mon
6 mm x 1100 mm x 10000 mm	528 3097	20000035	≤ +5°C ≤ +25°C	6 Mon 1 Mon

* Tolerances according to EN 14879-4

The rubber sheets are wrapped in PE film on cardboard sleeves and packed freely suspended in sturdy, stackable cardboard boxes. The products must be stored in a cool, dry place protected from direct sunlight. If the minimum shelf life is exceeded, the materials must be checked before use. Higher storage and transport temperatures shorten the shelf life. The containers must be stored frost-free and tightly closed and resealed after each removal. DIN 7716 must be observed. Information on handling, storage & transport can be found in the safety data sheet.

SAFETY MEASURES

The safety data sheets for the individual components and the legal regulations for handling hazardous substances must be observed. The prescribed personal protective equipment must be worn. Information on disposal can be found in the safety data sheets for the individual products. The safety data sheets can be downloaded from our homepage in the download area.

PHYSICAL DATA

Properties	Standard	Unit	Value
Abrasion	ISO 4649 (ASTM D5963)	mm ³	≤ 320*
Colour	-	-	black
Density	EN ISO 1183-1 (ASTM D792)	g/cm ³	1.25 ± 0.02
Elongation at break	DIN 53504 (ASTM D412)	%	≥ 500**
Max. Surface pressure	-	N/mm ²	2
Peel strength steel	ISO 813 (ASTM D429)	N/mm	≥ 4
Polymer base	ISO 1629 (ASTM D1418)	-	BIIR
Rebound resilience	DIN 53512	%	≥ 6*
Shore hardness	ISO 48-4 (ASTM D2240)	Shore A	50 ± 5* 53 ± 5*** 60 ± 5****
Temperature range	-	°C	-40 up to +110
Tensile strength	DIN 53504 (ASTM D412)	N/mm ²	≥ 5**

The specified temperatures depend on the existing load and can therefore vary.

* Press vulcanisation ** S2 bar after press vulcanisation *** After pressureless vulcanisation (test plates) **** After complete vulcanisation under operating conditions

Information given in the fact sheet above corresponds to the current knowledge available to us regarding our products at the time of its drafting and is intended as a guideline for informational purposes. However, because of the multiple possibilities regarding possible applications, processing and on site conditions, any information given in the fact sheet above is not legally binding, in particular, without being limited to, such information shall not be interpreted as a warranty of merchantability or of fitness for a particular purpose. Customer therefore is advised to conduct its own testing or make an inquiry with our technical department before ordering. We reserve the right to change the product at any time, in particular, without being limited to, minor changes because of advancements in technology. If by way of exception, the information given in the fact sheet above is incorporated by reference into any contract concluded with us under German Law, such information, shall only be interpreted as determining the specific requirements of the contractual products as set out in § 434 BGB (German Civil Code) and shall not be interpreted as constituting a guarantee of condition.