

PRODUCT INFORMATION

CHEMOLINE 4 CN

PRODUCT DESCRIPTION

CHEMOLINE 4 CN is an already vulcanised black soft rubber lining based on Bromobutyl rubber (BIIR), which is equipped with an easy to bond, reactive bonding layer. **CHEMOLINE 4 CN** can be loaded directly without further vulcanisation.

FIELDS OF APPLICATION

CHEMOLINE 4 CN is used mainly for on-site rubber linings of steel and concrete components which are exposed to chemical loads. The field of applications are chemical plants, chlorine and steel industries, fertilizer manufacturing plants, power plants, mineral processing plants and environmental protection plants. Some typical examples of applications are the lining of storage tanks, agitated tanks, crystallization and condensation reactors, thickeners, pipe spools, containment buildings in nuclear power plants and process tanks in flue gas desulphurisation (FGD) plants.

APPROVALS & CERTIFICATES

- **CHEMOLINE 4 CN** is approved (**Z-59.22-149**) by the German Institute of Construction Technology (DIBt) for steel storage vessels.
- Approval for nuclear power plants according AVS D 6.1/50 Rev. A

FEATURES

- Strong chemical resistance against mineral acids, bases, polar solvents and salt solutions
- Outstanding diffusion resistance to sulphur dioxide and saturated water vapour
- Application onto steel and concrete components
- Can be exposed to the operation conditions right after the application
- On site rubber lining

CHEMICAL RESISTANCE

Information on the chemical resistance properties is available upon request.

SUBSTRATE

Substrates are components made of non-ferrous metals, cast iron, non-alloyed or austenitic steel, concrete, screed or plaster. Components to be rubber lined shall be designed and manufactured in accordance with EN 14879-1.

SURFACE PRE-TREATMENT C-STEEL

All surfaces to be rubber lined must be dry and free of contaminants. All contaminants, including non-visible detectable contaminants, must be removed in accordance with DIN TR 55684 or EN ISO 8502. Non-alloyed steel surfaces shall be abrasive blasted to "Near White Metal" in accordance with EN ISO 12944-4. A surface preparation degree of SA 2½ (SSPC-SP 10; NACE No. 2) as specified in EN ISO 8501-1 and a "medium (G)" roughness degree as specified in EN ISO 8503-2 must be achieved. A minimum surface profile of $R_z \geq 50 \mu\text{m}$ is required. To prevent flash rust, the primer must be applied immediately after the blasting and cleaning of the substrate or the component must be air conditioned to a relative humidity of $\leq 40\%$.

CONCRETE

Appropriate action shall be taken to prepare the concrete surfaces; dry and free of dust and free of contaminants such as oil or grease. The concrete shall have minimum tensile strength of 1.5 N/mm² and minimum compressive strength of 25 N/mm². The residual moisture content must not exceed 4%. Generally the concrete surface must be smoothed prior to rubber lining application by applying an Epoxy resin based mortar coat. This coat should be conductive to enable a subsequent spark test (**REMAFIX C**).

ENVIRONMENTAL CONDITIONS

Throughout the rubber lining process, the temperatures of the substrate and rubber lining materials shall be maintained within the range specified by TIP TOP. All surfaces shall be maintained at a temperature at least 3K above the dew point in order to prevent condensation.

ADHESIVE SYSTEM

CHEMOLINE 4 CN is bonded on steel or concrete components by using the primer system **PRIMER PR 304** in combination with the adhesive system **CEMENT BC 3004** with 4% **HARDENER E 40**.

APPLICATION METHOD AND CONSUMPTION

During the application of the product, the application instruction must always be observed.

Coat	Product	Application Method	Coverage [g/m ²]
1. Coat steel	PRIMER PR 304	Roll / Spray	ca. 200
2. Coat steel	CEMENT BC 3004	Roll	ca. 200
3. Coat steel	CEMENT BC 3004	Brush	ca. 200
1. Coat rubber	CEMENT BC 3004	Brush	ca. 200

If **PRIMER PR 304** is applied by airless spray, **PRIMER PR 304** must be diluted with **SOLVENT CF-CE** in a mixing ratio of 1:1

CLEANING

Clean all equipment with **SOLVENT CF-CE** immediately after use.

VULCANISATION

Due to the already completed vulcanisation at the workshop, no further thermal treatment is longer necessary.

SPARK TEST

The spark test (holiday test) of new rubber linings is carried out according EN 14879-4 by using a high voltage tester. For carrying out the spark test, only the high voltage testers of Elmed model Isotest IIRT, Isotest 3P or Isotest Inspect 35 as well as the test pistols of Wegener model WEG 20, WEG 22 or WEG 100 are allowed.

CHEMOLINE 4 CN

CHEMOLINE 4 CN	Test Voltage [kV/mm]	Max. Test Voltage [kV]
vulcanised	4.0	20.0

SAFETY MEASURES

The material safety data sheets of the individual components, the safety instructions on the packing (label) as well as the legal requirements for handling hazardous materials must be observed.

PACKING UNITS

The products are supplied in the following standard package sizes:

Product	Size	Article No.
CEMENT BC 3004	4.5 kg	525 4095
CEMENT BC 3004	9 kg	525 4143
CEMENT BC 3004	18 kg	525 4130
HARDENER E 40	30 g	525 1067
PRIMER PR 304	0.75 kg	525 4112
PRIMER PR 304	10 kg	525 4150
SOLVENT CF-CE	10 l	595 9163

PACKAGING OF RUBBER SHEETS

The rubber sheets are wrapped with PE-separating sheets on cardboard cores, and packed freely suspended in stable, stackable card boxes, to avoid pressure points.

CHEMOLINE 4 CN is manufactured by extrusion in the following standard sizes:

Size (Tolerances according EN 14879-4)	Article No.
3 mm x 1100 mm x 10000 mm	528 7897
4 mm x 1100 mm x 10000 mm	528 7907
5 mm x 1100 mm x 10000 mm	528 7914
6 mm x 1100 mm x 10000 mm	528 7921

STORAGE

The products must be stored in a cool and dry place, away from direct sunlight. The rubber sheets must be stored free of pressure, best in the original packaging. The rubber sheets may not receive any pressure points. At the specified storage temperatures a shelf life of the products is given of at least for the following periods:

Product	Temperature	Shelf Life
CEMENT BC 3004	5 - 25°C	24 Months
HARDENER E 40	5 - 25°C	24 Months
CHEMOLINE 4 CN	≤ +30°C	24 Months
PRIMER PR 304	5 - 25°C	12 Months
SOLVENT CF-CE	5 - 25°C	60 Months

If the storage time is exceeded, the materials must be tested before use. Higher storage and transport temperatures will reduce the shelf life. The containers must be kept tightly closed. Liquid products must be stored frost-proof. In addition, the DIN 7716 must be observed.

Technical Data	Standard	Unit	Value
Polymer Base	ISO 1629 (ASTM D1418)	-	BIIR
Abrasion	ISO 4649 (ASTM D5963)	mm ³	≤ 320*
Density	EN ISO 1183-1 (ASTM D792)	g/cm ³	1.25 ± 0.02
Hardness - Shore A	ISO 48-4 (ASTM D2240)	-	55 ± 5**
Max. Surface Pressure	-	N/mm ²	2
Surface Resistance	EN 62631-3-1	Ω	≥ 10 ¹²
Elongation at Break	DIN 53504 (ASTM D412)	%	≥ 370***
Tensile Strength	DIN 53504 (ASTM D412)	N/mm ²	≥ 4***
Peel Strength to Steel	ISO 813 (ASTM D429)	N/mm	≥ 4
Temperature Range	-	°C	-40 up to +90

* Press vulcanisation ** Autoclave vulcanisation *** 4 mm rubber

Note: The indicated temperatures are dependent on the present load and may vary

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.

TIP TOP Oberflächenschutz Elbe GmbH | Heuweg 4 | 06886 Wittenberg / Germany
 Phone: +49 (0) 3491 635 50 | E-Mail: info@tiptop-elbe.de | Internet: www.tiptop-elbe.com

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