

# permanent carbon wrap

## *product data sheet*



### history

Our carbon wrap was developed as permanent repair method for all kind of pipeline features (internal and external corrosion, dents and cracks). In addition to the common approvals (API 579-1, ASME PCC2:2008, DIN CEN ISO/TS 24817:2006) our repair system achieves the very strict regulations of the German TÜV-Standard 1070 and is nowadays the only system for really permanent pipeline repairs - which means more than 100 years!

### design

Our carbon wraps are individually designed for each defect minding the defect size as well as the reduced pipe pressure during application. On our homepage [www.pipeandlines.com](http://www.pipeandlines.com) you will find a questionnaire which you fill in with relevant data and send it back to us as basis for calculation and layout of the wraps.

### application

Our wraps can be installed without shut down of the pipeline – reduction of pipeline pressure is sufficient. After sandblasting (SA3) or powertool grinding (St3), the galvanic separation layer is applied, followed by the application of the **pcw** by using our special application equipment. After an average curing time of 4 hours the pipeline can be operated normally.



### training

Especially trained experts will perform application of **pcw**-wraps on site. In case of larger numbers of defects we are prepared to educate and certify your staff for own application, either in our training center in Austria or during first applications on your site.



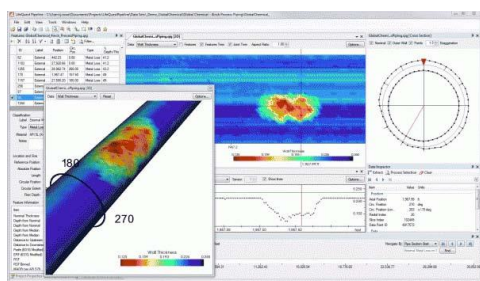
### your advantages

- ✓ professional layout of the wrap – designed for each feature
- ✓ application temperature: 5°C to 50°C
- ✓ chemical resistance of all used components
- ✓ back in operation within appr. 4 hours – no additional heating
- ✓ „all in one“ repair kit – contains all utilities for application
- ✓ easy field application – no hot works, no heavy repair equipment
- ✓ **longlife repair method which means 100 years**

## technical data

<b>width of carbon bandages:</b>	100 - 635 mm (depending on defect dimensions)
<b>kind of application:</b>	straight (one above the other) or spiralled
<b>length of bandages:</b>	not limited
<b>max. operating pressure of pcw</b>	not limited – rehabilitation of original max. pipe pressure
<b>number of layers:</b>	custom-calculated – for each defect size
<b>pipeline pressure during application:</b>	as low as possible (considered for layer-calculation)
<b>pipeline dimensions:</b>	4 - 50" (larger ones on request)
<b>pipeline operating temperature:</b>	-40 to +80°C
<b>surface preparation:</b>	sandblasting (SA3 >60µm) or powertool grinding (St3 >60µm)
<b>galvanic separation:</b>	by pcw-primer (layer thickness min. 200 µm)
<b>reliability of components:</b>	chemical and hydrocarbon resistance of all components
<b>application temperature:</b>	5 to 30°C (pcw-standard), 25 to 50°C (pcw-calor)
<b>handling time:</b>	4 to 0,5h (pcw-standard), 3 to 0,5h (pcw-calor)
<b>adhesive bonding:</b>	> 10 MPa
<b>UV-protection:</b>	necessary at above ground pipelines (e.g. PU-coating...)
<b>dew point:</b>	not relevant - pcw can also be applied on wet surface
<b>full MAOP resistance:</b>	after 6 to 24h (depending on environment temperature)
<b>hardness test after application:</b>	min. 50 shore „D“
<b>fatigue resistance:</b>	100 years - <b>the unique certified composite repair world wide</b>
<b>executed tests:</b>	load cycle tests (> 100.000 full loads), pressure-step tests, adhesive bonding tests, crack test, strain measurement
<b>certificates:</b>	permanent repair system according to German VdTÜV-Merkblatt 1070 (5.2010) „guideline for qualification of pipeline rehabilitation systems“, ASME PCC2:2008, DIN CEN ISO/TS 24817:2006

**A world wide unique composite pipeline repair system, certified for > 100 years lifetime and predestinated to repair all kind of pipeline defects**



- ✓ external metal loss
- ✓ internal metal loss (leak tightness must be ensured)
- ✓ dents
- ✓ cracks and crack-like features
- ✓ laminations
- ✓ welding defects
- ✓ original pipeline pressure reinforcement

## steps of installation

After receiving the completed questionnaire with all relevant pipeline and defect data, we calculate the proper carbon wrap for your repair. The **pcw**-repair set will be delivered with all necessary installation equipment to the customer.



**1.step:** greaseless surface preparation (grinding or sandblasting acc. to specification)



**2.step:** equalisation of dents, ext. metal loss or girth welds with **pcw**-filler material



**3.step:** base coating with **pcw**-primer or **pcw**-filler for galvanic separation



**4.step:** application of the **pcw** (permanent carbon wrap) with **pcw**-winder



spirally wrapped application- MAOP reinforcement of whole pipe segments



**5.step:** finished installation of **pcw**-ready for final isolation

If you get aware of any defect in one of your pipelines, don't hesitate to contact us - we will offer you the only durable and cost effective solution.

[office@pipeandlines.com](mailto:office@pipeandlines.com)  
[www.pipeandlines.com](http://www.pipeandlines.com)