Product Code: SYLHD

TECHNICAL DATA SHEET

SYLWRAP HD PIPE REPAIR BANDAGE

WRAS APPROVED MATERIAL

Description

SylWrap HD Pipe Repair Bandage is a composite fibreglass wrap with a water-activated resin which sets rock hard in minutes, providing high-strength reinforcement and refurbishment for damaged or worn pipes which have fallen below specification.

Low Hazard LH <0.1% Diisocyanate

Unlike all other moisture cured wraps, SylWrap HD contains <0.1% diisocyanate, making it the safest product for end-users with no long term respiratory health effects. This low diisocyanate content means SylWrap HD is not covered by the REACH 2023 legislation governing the safe use of diisocyanates. No mandatory safety training is required before use.

Applying SylWrap HD is easy. The user dips the wrap in water to activate the resin before wrapping around the pipe or structure which requires strengthening. SylWrap HD has a working time of 2-5 minutes and a functional cure is achieved in 30-45 minutes. It can be used on high pressure pipework in excess of 30 bar and temperatures up to 120°C.

Once cured, SylWrap HD forms an impact resistant, chemically inert protective shell around pipework. It increases pipe wall thickness, pressure resistance, corrosion resistance, chemical resistance and hoop strength. Where a leaking pipe has been sealed, overwrapping the sealant material with SylWrap HD will reinforce the initial repair.

SylWrap HD comes in a number of different bandage sizes, enabling repairs to be made on pipes of all diameters. It can be applied to steel, copper, malleable iron, GRP, ceramic, clay, most plastics, concrete, rubber, and other materials. It can be used underwater and has WRAS Approval, meaning it is safe to use on pipes and fittings carrying drinking water.

Applications

Water and wastewater:	Strengthen older pipes before they burst and reinforce leak repairs on water networks
Petrochemical plants:	Reinforce degraded pipes from the outside without using tools or shutting down systems
Heavy industry use:	Refurbish and protect pipes in highly abrasive environments
Power stations and oil rigs:	Effective on oil, gas, water and coolant pipes
Marine:	Fuel lines, water and waste pipe repairs to ships, yachts and boats in dock or whilst at sea

Technical Data

Working time.....2-5 minutes depending upon temperature

Cured material life.....10-20 years depending upon repair quality, repair thickness, condition of pipe, environmental conditions, pipe temperature, etc. Consult Sylmasta for further information and design life for specific applications

Initial cure time.....7-10 minutes

Functional cure.....30-45 minutes

Lap shear adhesive strength.....7 MPa

Full cure (maximum properties).....24 hours

Shore D hardness.....75

Tensile strength.....250 MPa

Coefficient of thermal expansion.....7.1 x 10^{-5} / °C (SylWrap composite wrap)

Service conditions

- **Max service temperature**.....120°C / 250°F
- **Max leak pressure resistance**.....30 bar / 435 psi with 10 layers, depending upon size of pipe and leak. Hole requires sealing with epoxy filler first to reach max pressure. (Tested on 50mm pipe with 10mm hole and 110mm pipe with 25mm hole). Higher pressures can be achieved using calculated values - contact Sylmasta for more information.
- **Pipe reinforcement**.....For pipe reinforcement, pressure resistance can be designed to the requirements of ASME PCC-2 - Repair of Pressure Equipment and Piping. Consult Sylmasta for further information

Chemical resistance.....Acetone, ammonia, sulphuric acid (30%), ethyl alcohol, mineral spirits, gasoline, MEK, toluene, diesel, hydrochloric acid, Varsol, ethylene glycol, crude oil, hydraulic oil (test period of 40 days)

Storage

SylWrap HD should be stored unopened in its original foil packaging in dry conditions between 5 - 25°C. Under such conditions, it has a shelf life of 24 months from date of manufacture. Piercing or damaging the pouch will cause SylWrap HD to cure prematurely.

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SylWrap HD Sizes

SylWrap HD is available in 11 different wrap sizes for application on the following outside pipe diameters.

Product Code	SylWrap Size	Pipe Diameter
SYL106HD	25mm x 1.8m	Up to 15mm
SYL206HD	50mm x 1.8m	15 - 25mm
SYL212HD	50mm x 3.6m	25 - 50mm
SYL309HD	75mm x 2.7m	25 - 50mm
SYL312HD	75mm x 3.6m	50 - 75mm
SYL412HD	100mm x 3.6m	50 - 100mm
SYL416HD	100mm x 5.0m	75 - 125mm
SYL616HD	150mm x 5.0m	100 - 150mm
SYL633HD	150mm x 10.0m	150 - 300mm
SYL866HD	200mm x 20.0m	300 - 600mm
SYL1266HD	300mm x 20.0m	600mm +

Case Studies

Water Pumping House Corroded Steel Pipe Reinforcement

After many years service, a pipe bringing water from a reservoir on the lower levels to the upper levels of the pumping house was suffering from heavy corrosion. As a cost-effective and more convenient alternative to replacement, it was decided to reinforce the pipe before corrosion ate all the way through. SylWrap was wrapped around a six metre section of the pipe, including two 90 degree elbow bends. The cured material offered new strength and protected the metalwork against future attack from corrosion.

Pipe Bridges Lifespan Extension Through Leak Repair & Reinforcement

Two gravity-fed pipe bridges carrying sewage across a stream were found to be leaking in numerous places through corroded joints. Both pipe bridges were due for replacement in the near future, but the escape of wastewater required immediate attention. Given the considerable cost and complexity of constructing scaffolding for repair, the water company decided to gain maximum return on investment by reinforcing the bridges at the same time. Wrapping their entire 20 metre lengths in SylWrap extended the lifespan of each bridge by up to 20 years.

Chemical Plant Repair 350mm Steel Effluent Pipe Underneath Salt Marshes

A 350mm effluent pipe running beneath a salt marsh was discovered to be leaking just one year after undergoing repair with a clamp. The wall of the pipe was now so thin that removing the clamp risked the collapse of the entire line. Accessing the pipe was only possible whilst the tide was out, leaving an eight hour window to make a repair. Encompassing the clamp with **Sylmasta AB Original Epoxy Putty** and then wrapping the entire line in SylWrap sealed the leak and protected the steel from the harsh saltwater environment, all in the required time frame.

Petrochemical Refinery 100mm Sulphuric Acid Line Elbow Reinforcement

During an inspection of pipework, a 90 degree elbow bend in a line carrying sulphuric acid at 22 bar pressure was discovered to have degraded by 21mm thickness. This required urgent attention before the line failed. Pressure was reduced to 8 bar and **Industrial Metal Epoxy Paste** used to create a new metallic casing around the weakened area. SylWrap was then applied for further reinforcement. The two products combined took the elbow back to its original specification, all with little disruption to output at the refinery. Within 24 hours, the line was operating again at 22 bar.

Wastewater Treatment Plant Seal Pipe Flange Against Tree Ingress

A 1800mm underground steel pipe had been penetrated by a tree between two flange plates connecting the line to a chlorine contact tank. Once the pipe had been excavated and the tree root removed, SylWrap was used to create a rock hard protective shell around the flange. A SYL412HD Bandage fitted perfectly over the 100mm width of the flange, curing to form an impact resistant layer which future tree roots growing towards the pipe would be unable to penetrate once the line was reburied.