

The Isealate Springblade Patch

The Isealate Springblade Patch technology is deployed on e-line and accurately places steel layers inside existing tubing or casing to re-instate and seal-off areas of unwanted flow to or from annulus. With minimal loss of internal diameter (ID), the unique configuration allows Isealate to design the patch for the specific application and well conditions. The number of laminate layers is selected to meet the pressure differential requirements in burst or collapse scenarios.

The resultant overall thickness of the patch is determined by the number of steel layers (each layer is 0,4 mm in thickness). The resulting ID reduction in the wellbore is minimal in comparison to currently available alternatives allowing for Patch-thru-Patch applications with a minimum affect on flowrate in the wellbore.

Applications	Features	Benefits
<ul style="list-style-type: none"> Eroded/pitted pipe 	<ul style="list-style-type: none"> Accurate placement inside the tubing/casing 	<ul style="list-style-type: none"> Deployed on standard e-line (monoconductor)
<ul style="list-style-type: none"> Leaking connections 	<ul style="list-style-type: none"> Installed by the purpose built Isealate Patch Activation Tool 	<ul style="list-style-type: none"> Possible to run through restrictions: patch-thru-patch application
<ul style="list-style-type: none"> Screens 	<ul style="list-style-type: none"> Material: 4310 spring steel 	<ul style="list-style-type: none"> Minimal loss of flow rate
<ul style="list-style-type: none"> Slotted liner 	<ul style="list-style-type: none"> The epoxy cures and hardens by well temperature 	<ul style="list-style-type: none"> Allows for almost full access for subsequent interventions
<ul style="list-style-type: none"> Pre-perforated pipe 	<ul style="list-style-type: none"> Can be punched/perforated after being installed 	

Specifications*	Imperial	Metric
<ul style="list-style-type: none"> Running tool OD 	<ul style="list-style-type: none"> 2,68" - 3,55" - 4,33" 	<ul style="list-style-type: none"> 68 - 90 - 110mm
<ul style="list-style-type: none"> Pipe OD 	<ul style="list-style-type: none"> 3 1/2" - 5 1/2" -(7")* 	<ul style="list-style-type: none"> 89 - 140 - (177)* mm
<ul style="list-style-type: none"> Collapse Pressure 	<ul style="list-style-type: none"> 1450 psi - 3625 psi* 	<ul style="list-style-type: none"> 100 bar (*250 bar)
<ul style="list-style-type: none"> Burst Pressure 	<ul style="list-style-type: none"> Equivalent to burst rating of pipe 	
<ul style="list-style-type: none"> Patch length 	<ul style="list-style-type: none"> 9.8 ft - 14.4 ft 	<ul style="list-style-type: none"> 3m (*1.0m - 4,4m)
<ul style="list-style-type: none"> One layer thickness 	<ul style="list-style-type: none"> 1/64" 	<ul style="list-style-type: none"> 0.4mm
<ul style="list-style-type: none"> Total ID reduction * 	<ul style="list-style-type: none"> 1/8" - 5/16" 	<ul style="list-style-type: none"> 3 - 8 mm
<ul style="list-style-type: none"> Well temperature range (Springblade Patch) 	<ul style="list-style-type: none"> 113 - 230 F 	<ul style="list-style-type: none"> 45 - 110 C°
<ul style="list-style-type: none"> Well temperature range (Running tool) 	<ul style="list-style-type: none"> 50 - 250 F 	<ul style="list-style-type: none"> 10 - 120 C°

* Dependent upon application and well conditions

Please see table below as guideline



Tubing size (inch)	Tubing ID (inch)	Tool OD (inch)	Patch length (m)	Well temperature	Burst (bar)	Collapse (bar)	Calculated ID of patch after set (inch)
3-1/2" (9.2 ppf)	2.992	2.68	3	45 - 110 degC	175	100	2.74
3-1/2" (9.2 ppf)	2.992	2.68	3	45 - 110 degC	250	200	2.65
3-1/2" (9.2 ppf)	2.992	2.68	3	45 - 110 degC	250	250	2.58
4-1/2" (12.6 ppf)	3.958	3.55	3	45 - 110 degC	150	100	3.67
4-1/2" (12.6 ppf)	3.958	3.55	3	45 - 110 degC	250	200	3.52
4-1/2" (12.6 ppf)	3.958	3.55	3	45 - 110 degC	250	250	3.45
5-1/2" (12.6 ppf)	4.78	3.55 / 4.33	3 / 4.4	45 - 110 degC	125	100	4.4
5-1/2" (12.6 ppf)	4.78	4.33	4.4	45 - 110 degC	200	200	4.3
5-1/2" (12.6 ppf)	4.78	4.33	4.4	45 - 110 degC	200	250	4.2

4310 steel

Steel thickness = 0.4mm

Testing performed with 2 x 8mm holes in tubing

Leak tested to V3 rating

20-45 degC epoxy is available but requires special cooling requirements during transportation