



**Alchemy**<sup>®</sup>  
Oilfield Services Limited

Unit 19d, Camiestone Road, Thainstone Business Park, Inverurie, Aberdeenshire, AB51 5GT Phone +44 (0) 1467 672100

## Alchemy LDCeal<sup>®</sup> Range

### Description

Alchemy LDCeal<sup>®</sup> range of sealing materials, LDCeal<sup>®</sup> 100 and LDCeal<sup>®</sup> 300, is a low density, flexible sealing and insulating system based on the application of a fluid material which sets and cures in a time dependent system. The material is deployed as a two part system which is mixed at the work site before being injected into the area in which sealing and insulation is required. The application work time and the setting and curing time may be varied by the relative proportions of chemicals (Base and Catalyst) added together and injected into the required area. The ambient temperature as well as the temperature of the application area will also be related to the pumping/working time/pot life and curing time of the product.

### Applications

The LDCeal<sup>®</sup> range of materials is extremely effective in grouting and insulating clamp repair systems, isolating pipeline and manifold areas and sealing valve casing leaks as well as valve stem packing areas and areas where safety issues require a sealing system to be deployed. The material can also be used in wellhead areas as an emergency repair system, for casing hanger joints, other gallery areas or where o-ring seals may have lost integrity. The LDCeal<sup>®</sup> product range has a very low U value and therefore exhibits excellent thermal insulation properties and can be applied in a wide range of applications.

### Stability

Due to the unique and inert nature of the materials used in the manufacture of the LDCeal<sup>®</sup> range of products the system is very stable to chemicals and fluids normally found in the oilfield (oil, water, gas, saline, sweet and sour conditions) as well as a wide range of temperatures in service. The system is flexible and self energising and, dependant on the sealing cross sectional area, high pressure may be effectively contained in various systems. As the LDCeal<sup>®</sup> product range is self bonding it can cope with changes in temperature within the sealing area compared to highly adhesive products which will crack and lose integrity if subjected to temperature stress.

### Additional Features

The product has additional environmental features and the components used and final product made are non hazardous materials which are recognised by the American FDA for repeated use with food products under regulation 21CFR177.2600 Polymers- Articles intended for repeated use and 21CFR175.300 Adhesives and Components of Coatings – Resinous and polymeric materials.

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## Dissolving

LDCeal<sup>®</sup> products can be dissolved by application of Ceal<sup>®</sup>Solve. The dissolution rate is related to the thickness of the section and where deeper sections are to be treated agitation may be necessary to provide adequate speed of dissolution. Ceal<sup>®</sup>Solve works by chemically etching the external layer of what is a fairly inert product so the dissolution rate is related also to temperature and agitation of the surface at the application point. Ceal<sup>®</sup>Solve is applied at a rate of about 3:1 of LDCeal<sup>®</sup> again depending on the thickness of section to be dissolved. A 5mm section will normally dissolve within 48 hours in ambient conditions of approx 18°C and this rate can be increased with agitation and heat. The dissolved product is a free flowing liquid mixture which will separate on standing.

## Typical properties

In general the Base material is a white viscous liquid and the Catalyst or Curing Agent is a blue/pastel blue viscous liquid. When these two components are mixed together a uniform pastel blue colour in the final product indicates that even mixing has been achieved. If required, colouring of Base and/or Catalyst can be varied to meet customer requirements.

Colour of Base	White
Colour of Catalyst or Curing Agent	Blue/Pastel Blue
Colour of evenly mixed product	Pastel Blue
Viscosity of mixed material	10,000 to 30,000 mPas approx
Density	0.900 approx
Pot life at Ambient Temperature	ca. 1 - 12 hours
Cure Time at Ambient Temperature	12 - 72 hours
Shore A hardness of Cured Material	40 - 50
Thermal Conductivity	<0.30 W/mK approx
Coefficient of Expansion	25 X 10 <sup>-5</sup> cm/cm °C
Specific Heat	0.35 cal/gm °C
Dielectric Strength	18.0 kV/mm
Recommended Storage temperature	below 30°C
Operating temperature range	-50 to 200°C

## Supply

The product is supplied in kits containing the relevant Base and Curing Agent amounts to meet client's requirements. The kits are available in 1 - 20 litres. Larger amounts may be supplied upon request. The above properties are typical of the range of LDCeal<sup>®</sup> materials but the data presented is not a specification for any single product in the range.

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