SilJel total water-shutoff solutions

Stop unwanted water production

The Baker Hughes **SilJel™ water-shutoff solutions** are solids-free treatment fluids that are pumped into permeable formations to form permanent plugs, which seal reservoir porosity and permeability. Ideal for shutting off unwanted water production, the fluids are non-selective, so placement is a key consideration with these treatments.

The fluids have low viscosity (around 2 cP) when mixed and pumped, but after gel formation begins, they thicken rapidly to a rigid gel. As a result, they can invade the formation deeply—typical designs assume a 7- to 8-ft radius of penetration—rather than affecting only an interfacial contact zone. This results in stronger gel plugs that can withstand higher differential pressures compared with conventional cement.

The SilJel family of fluids for water shut-off comprises two systems: Regular SilJel fluids are applicable up to 200°F (93°C) and SilJel HT fluids up to 300°F (150°C). These plugging solutions can be used alone or followed by a cement squeeze for added mechanical sealing at the wellbore.

Safety Precautions

Refer to material safety data sheets (MSDS) for handling, transport, environmental information, and first aid.

References

System component MSDS

Typical properties

Typical temperature range	Up to 300°F (150°C)

Applications

- Water shut-off operations in oil and gas wells
- Profile modification of water injectors
- Treatments in sandstone formations

Features and Benefits

- Low initial viscosity during pumping
- Fluids invade small pore structures and fractures that cement or polymer systems may not penetrate
- Invades the pore structure several feet from the wellbore
- Good plugging efficiency
- In sandstones, SilJel can plug the matrix and withstand differential pressures of more than 1500 psi/ft (33,930 kPa/m)
- Internally activated
- Operationally simple to use
- Requires no additional fluids or chemicals to produce gel structure