



DOWELL DIVISION OF THE DOW CHEMICAL COMPANY

BOX 1878

FARMINGTON, NEW MEXICO

July 10, 1959

Mr. Frank Grey
1201 East 16th Street
Farmington, New Mexico

Subject: Temporary Plugging Material- Extended Working Time

Summary:

This material known under Dowell code as Jel X 820, is a Kerosene gel offering working times from several days to several weeks. (The working time is defined as the time in the well during which the gel maintains 3/4 of its maximum viscosity). The well temperature and amount of catalyst used in the gel are the controlling factors in determining how rapidly the gel forms, and how long it retains a high viscosity. Thus by knowing the bottom hole temperature and the length of the zone to be plugged we can determine how much material is needed and govern working time to fit most work over jobs.

Application:

This type gel has been used very successfully in many applications such as plugging off a zone while working on another zone for an extended period, (three weeks for instance). Other possible applications include:

1. As a plug to seal off a zone while well is being deepened.
2. As a protective plug in conjunction with packer while zone below is being re-worked.
3. As a bottom hole plug while working on zone above.

The following table summarizes the scope of gels in regard to their working time and well temperature range:

Temperature	Viscosity Range	Working Time
60-100 °F	1 Million Gel Units	2 1/2 days-59 days
100-140 °F	1 Million Gel Units	3 days-41 days
140-170 °F	1 Million Gel Units	1.9 days-39 days

The viscosity is given in gel viscosity units which is related to centipoise but may not be identical due to difficulties in measuring very high viscosity. This material when it reaches its given gel strength resembles set gelatin. It remains in this form until the catalyst breaks down, and the gel gradually thins and is removed by well fluids. This can be controlled by either increasing or decreasing amount of catalyst used. Pressure in excess of 3000 psi have been applied without moving the gel from desired placement.

BEFORE THE
OIL CONSERVATION COMMISSION
SANTA FE, NEW MEXICO
Case No. 1420
EXHIBIT No. 3
CASE

Rehearing.

Case No. 1420
Exhibit No 3

" Page 2 "

In preparing a gel for temporarily plugging a formation, the following factors should be considered:

1. Desired thickness of gel (range from 100,000 cps to 1 million gvu.
2. How long the gel will act as a plug in the well.
3. How long it takes for the gel to thicken above ground before it becomes too viscous to pump.
4. Length of time required for the gel to break down and allow productions of well fluids.

If the problem of fluid migration should come about as we discussed, the use of this material should satisfactorily control the fluids until the necessary corrective steps can be taken to permanently seal off damage.

I hope this information concerning Jel X 820, will give you some insight regarding this particular chemical and how it works, and additional information will be supplied if possible.

Sincerely



K.W. Buckles
District Engineer

KWB:ec

Case No 1420
Exhibit No. 3