

SCIENCE NEWS

IMPORT SUBSTITUTION OF OIL WELL CHEMICALS AND CEMENT

A Seminar on the above subject was organized at Madras by the Oil and Natural Gas Commission, Chemistry Section, on 13th and 14th November 1984. The subject matter was discussed under the following four groups (1) Pour point depressants, (2) Oil field chemicals, (3) Mud and cement additives and (4) Oil well class 'G' cement. The following is a brief summary of the Symposium:

1. Pour point depressant

Some of the crudes discovered have high pour points and during the process of transportation the temperature of crude may fall much below the pour point. This results in congealing of crude due to crystallisation of waxes. It is well known that addition of certain chemicals to the crudes can severely depress the pour point. The mechanism of action can be explained on the basis of alteration/change in crystal habit of waxes, leading to lowering of pour point. In this direction substantial work has been carried out by Regional Research Laboratory, Jorhat and M/s. Di-ichi as well as M/s Hico Products Limited, Bombay.

2. Oil field chemicals corrosion inhibitor

Corrosion Inhibitors are used for the protection of pipelines casing and tubings carrying crude oil and gas. The inhibitor should be compatible with the crude

oil, gas and oil-field waters. Normally, corrosion Inhibitors are of amine type.

Use of brines (solutions of sodium chloride, calcium chloride, zinc chloride, calcium bromide, zinc bromide) and solid free system are gaining popularity for high temperature and high pressure wells. The salts used in the preparation of brine are highly corrosive and the situation is further aggravated by the high bottom hole temperatures. This necessitates the use of corrosion inhibitors effective under high salt concentrations and temperatures. The rate of corrosion should be well below 3 mpy on 30 days test under stimulated conditions.

Water treatment chemicals

Before water is pumped into the formation, it is necessary to treat water with a view to preventing formation damage due to precipitation of salt, deposition, scale, growth of anaerobic sulphate reducing bacteria and others. The water conditioning consists of the following treatments: (a) Scale inhibitor (phosphate esters type), (b) Corrosion inhibitors (amine type), (c) Bactericide, and (d) Oxygen scavenger (ammonium bisulphite based).

Besides, polyelectrolytes for flocculation of suspended particles and defoamer for removal of foam for effective deaeration of sea water also used.

Table 1 Projection of demand for oil well chemicals and cement. Quantity (Qty) is given in metric tons and value in terms of lakhs of Rupees

Description	1985-86		1986-87		1987-88		1988-89		1989-90	
	Qty.	Value	Qty.	Value	Qty.	Value	Qty.	Value	Qty.	Value
Oil Well Cement										
Class G	90990	1117	137300	1685	138350	1697	160525	1969	173575	2129
Ferro Chrome Ligno Sulphonate (FCLS)	1485	70	2250	127.5	3150	177	4050	229	5000	283
Resinex	600	185	850	230	1250	338	1650	446	2000	540
Pour Point										
Depressant (PPD)	11000	2750	11500	2870	15000	3750	18000	4500	20000	5000
Corrosion Inhibitor	850	121	900	129	1000	140	1100	2	1200	168
Triethylene Glycol	500	2640	600	3168	700	3696	750	3960	800	4224
Fluid Loss Agent	78	104	95	141	125	185	150	222	200	296
Friction Reducer	114	102	139	132	150	142	175	166	200	190
Bactericide	150	60	160	64	300	120	400	160	500	200
Well Stimulation Chemicals	—	392	—	460	—	500	—	550	—	600

3A. Mud chemicals

ONGC imports a variety of mud and speciality chemicals needed for formulation and treatment of mud systems for high temperature and high pressure wells. These chemicals are used for correcting rheological and filtration loss properties, lubricating properties under bottom hole conditions.

The subject matter was discussed under the following scheme: (a) Ferrochrome ligno sulphonate, (b) Chrome lignite, (c) Resinex, (d) Loss circulation agent and (e) Spotting fluid.

B. Cement additives

Cement additives were discussed as under: (a) Fluid loss control additives, (b) Friction reducer/turbulence inducer, (c) Retarder.

4. Oil well cement

The class 'G' cement has been selected since this is

basic cement and is not chemically treated or tailored. Associated Cement Companies Ltd., as well as Dalmia Cements (Bharat) Limited, have come forward for indigenization of class 'G' oil well cement. The cement produced by them have shown good performance.

Projection or requirement

ONGC is purchasing oil well chemicals and cement worth crores of rupees every year. With a view to give some idea regarding their anticipated requirement in terms of quantity and money, projections have been worked out. These projections are given in table 1.

Further information about the Symposium can be had from Dr R. M. Mathur, Superintending Chemist, ONGC, No. 3, Ist Lane, N. H. Road, Madras 600 034 or Shri C. L. Kaul, D.G.M. (Chem.), ONGC, Makarpura Road, Baroda 390 009.

ANNOUNCEMENT

INTERNATIONAL UNION OF THEORETICAL AND APPLIED MECHANICS (IUTAM)

The International symposium of the IUTAM to be held at different places during July to December 1985 are as follows:

IUTAM Symposium on Mechanics of Damage and Fatigue: Place: Haifa and Tel Aviv, Israel, Date: July 1-4, 1985, Chairmen: Prof. S. R. Bodner, Technion, Faculty of Mech. Engineering, Haifa 32000, Israel; Prof. Z. Hashin, School of Engineering, Tel Aviv University, Ramat Aviv, Tel Aviv 69978, Israel.

IUTAM Symposium on Aero- and Hydroacoustics: Place: Lyon, France, Date: July 3-5, 1985, Chairmen: Prof. G. Comte-Bellot, Ecole Centrale de Lyon, Laboratoire de Mecanique des Fluides, B.P. No. 163, F-69131 Ecully Cedex, France, and Prof. J. E. Ffows Williams, University of Cambridge, Department of Engineering, Trumpington Street, Cambridge CB2 1PZ, England.

IUTAM Symposium on Hydrodynamics of Ocean Wave-Energy Utilization: Place: Lisbon, Portugal, Date: July 8-10, 1985, Chairmen: Prof. A. F. de O. Falcao, Instituto Superior Technico, Departamento de Engenharia Mecanica, Avenida Rovisco Pais, 1096

Lisboa Codex, Portugal, and Dr D. V. Evans, University of Bristol, School of Mathematics, University Walk Bristol, BS8 1TW, England.

IUTAM Symposium on Inelastic Behaviour of Plates and Shells: Place: Rio de Janeiro, Brazil, Date: August 5-9, 1985, Chairman: Prof. L. Bevilacqua, PUC-RJ, Centro Teonico Cientifico, R. Marques de S. Vicente 225, Gavea, Rio de Janeiro, CEP 22453, Brazil.

IUTAM Symposium on Macro- and Micro-Mechanics of High Velocity Deformation and Fracture: Place: Tokyo, Japan, Date: August 12-14, 1985, Chairman: Prof. K. Kawata, Department of Mechanical Engineering Science, University of Tokyo, Yamazaki, Noda, Chiba-ken 278, Japan.

IUTAM Symposium on Mixing in a Stratified Fluid: Place: Perth, Australia, Date: August 26-30, 1985, Chairmen: Prof. J. Imberger, University of Western Australia, Department of Mathematics, Nedlands, Western Australia 6009, and Prof. G. Batchelor, University of Cambridge, Department of Applied Mathematics and Theoretical Physics, Silver Street, Cambridge CB3 9EW, England.
