

OIL & GAS DEVELOPMENT COMPANY LIMITED
PROCUREMENT DEPARTMENT, ISLAMABAD
FOREIGN SECTION A

(To be completed, filled in, signed
and stamped by the principal)

ANNEXURE 'A'

01/12

Material POLY ANIONIC CELLULOSE- REGULAR (PAC-R)
Tender Enquiry No PROC-FA/CB/WS/CHEM-3169/2017
Due Date
Evaluation Criteria FULL

SCHEDULE OF REQUIREMENT

Sr No	Description	Unit	Quantity	Unit Price (FOB)	Total Price (FOB)	Unit Price C & F BY SEA	Total Price C & F BY SEA	Deviated From Tender Spec. If Any
1	POLY ANIONIC CELLULOSE - REGULAR (PAC-R)	Metric Ton	250					

Note:

- 1) PURSUANT TO TENDER CLAUSE # 2.2, 11.4, 13 & 35.3.2, BID BOND AMOUNTING TO USD 17,000/- OR EQUIVALENT TO PAK RUPEES MUST BE SUBMITTED WITH THE TECHNICAL BID AND VALID FOR 150 DAYS FROM THE DATE OF OPENING OF THE BID.
- 2) EVALUATION CRITERIA: FULL CONSIGNMENT WISE ON CFR KARACHI BASIS.
- 3) **TERMS AND CONDITIONS:** BIDDERS ARE ADVISED TO CAREFULLY READ ALL THE TERMS AND CONDITIONS OF THE TENDER DOCUMENT AVAILABLE AT OGDCL WEBSITE IN THE MASTER TENDER DOCUMENT.
- 4) **SHIPMENT FROM ACU MEMBER COUNTRIES:** IN CASE OF SHIPMENT FROM ACU MEMBER COUNTRIES, THE LC BENEFICIARY SHOULD BE OF THAT PARTICULAR COUNTRY FROM WHERE THE CONSIGNMENT IS BEING SHIPPED.
- 5) **SUMMARY REJECTION CRITERIA:** THE SUMMARY REJECTION CRITERIA AT CLAUSE 35 OF THE TENDER DOCUMENT MAY ALSO BE EXAMINED CAREFULLY. ANY BID NOT MEETING THE CRITERIA SPELLED IN THE CLAUSE # 35 SHALL BE SUMMARILY REJECTED WITHOUT ANY RIGHT OF APPEAL.
- 6) **DELIVERY PERIOD:** THE LEAD TIME OF THE QUOTED PRODUCT SHOULD NOT BE MORE THAN 180 DAYS AFTER OPENING OF LETTER OF CREDIT (LC).

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ANNEXURE:A-1

TECHNICAL SPECIFICATIONS SHEET OF
POLYANIONIC CELLULOSE - REGULAR GRADE (PAC-R)


Polyanionic Cellulose is a long chain Polymer of high molecular weight, readily dispersible in water base drilling fluids of salinity ranging from zero to saturated salt. It is used primarily as viscosifier, highly effective fluid loss reducer and secondary as shale inhibitor, mostly in the low solid mud.

Each bidder should fill-in the table given below with the properties of their quoted product. Only to write "conforming to" or OK will not be sufficient.

A) TECHNICAL SPECIFICATIONS

SR. NO	DESCRIPTION	REQUIRED SPECIFICATION	PROPERTIES OF THE QUOTED PRODUCT
01.	Appearance	Off white, powder.	
02.	Degree of substitution ASTM-D1439	0.9 Min	
03.	Presence of starch or starch derivatives	Absent	
04.	Moisture content	10 % Maximum.	
05.	Apparent Viscosity	50 CP Minimum	
06.	API Filtrate Volume	23 ml Maximum	

Note: Detailed API Procedure & Test Method for parameters mentioned at Sr. 03-06 are attached for reference.

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C) NECESSARY DATA

SR. NO.	DESCRIPTION	
01.	A Name of Bidder	
	B Name of authorized signatory of bidder	
	C Complete address, telephone, e-mail and fax numbers of bidder	
02.	A Name of Local agent	
	B Name of authorized signatory of local agent	
	C Complete address, telephone, e-mail and fax numbers of local agent	
03.	A Name of Manufacturer	
	B Name of Authorized Signatory of Manufacturer	
	C Complete address, telephone, e-mail and fax number of manufacturer.	
	D Website of manufacturer	
04.	Brand Name of Product	
05.	Country of origin	
06.	Port of shipment	
07.	Minimum shelf life of product	

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- D) Names of at least 07 clients / sales achievement (E & P companies only) other than OGDCL whom supplied the quoted product in bulk quantity (not less than 50 M.Ton) **with contract numbers and quantities during the last Five (05) years commencing from year 2011 as a proof of Five (05) years experience.**

SR. NO.	NAMES OF CLIENTS WITH ADDRESS AND TELEPHONE NOS.	CONTRACT / PURCHASE ORDER NOS. WITH DATE	QUANTITY SUPPLIED (M.TON)
01.			
02.			
03.			
04.			
05.			
06.			
07.			

E) **NECESSARY ATTACHMENTS FOR TECHNICAL BID:**

SR. NO.	DESCRIPTION	ATTACHED/ PROVIDED OR NOT.
01.	Product Data Memorandums in original printed by manufacturer.	Attached/ Not attached
02.	Material Safety Data Sheets in original printed by manufacturer.	Attached/ Not attached
03.	Valid ISO-9001-2008 certificate for manufacturing / Production of the quoted product consecutively from last 05 years.	Attached/ Not attached
04.	Original authority letter issued by the manufacturer to bidder for quoting their product.	Attached/ Not attached
05.	Company profile with manufacturing capability & Experience of last 05 years.	Attached/ Not attached
06.	Lab evaluation report of the quoted product from an internationally reputed third party laboratory in the light of technical specifications sheet at Annexure A-1	Attached/ Not attached.
07.	1 kg sample of offered product	Provided/ Not provided

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PACKAGING:

The chemical should be packed as **25 kg** net per bag in export quality new multi-wall paper bags having thick, high density inner polythene liner for rendering the material completely moisture proof. The material should be palletized as **01 M.Ton**, wrapped with thick polyethylene sheet and tightly strapped. The packaging of the required mud chemical should be of international standards and capable to safe transportation during ocean / road journey from port of shipment to well site and to withstand harsh weather conditions at the storage points and at the well sites / locations.

MARKING:

Each bag should have clearly legible marking, as given below;

- (a) Name of the product.
- (b) Name of the Manufacturer.
- (c) Date/month/ year of manufacture.
- (d) Minimum shelf life
- (e) Supply order number against which supplies are made.
- (f) Lot No._____/ Batch No._____.

INSTRUCTIONS TO THE BIDDERS/ TERMS & CONDITIONS:

1. The manufacturer of the quoted product must have minimum **05** years experience of manufacturing & supplying of indented chemical to E & P companies specifically, duly supported by valid authentic **ISO 9001-2008** certificate as a proof for manufacturing/ production of the quoted product consecutively from last 05 years. In case of any ambiguity, the certificate will be verified from issuing authority. The certificate duly submitted along with bid, will be considered final. No additional certificate will be entertained at any stage of the case.
2. **Minimum shelf life** of the quoted product **should not be less than 03 years.**
3. Technical Specifications Sheet of the quoted product duly filled-in must be enclosed in the technical bid.
4. **Delivery period** of the quoted product should not be more than **180 Days.** The material must be delivered in 02 equal consignments. The first partial shipment should be made within 90 days after establishment of LC. However second partial shipment will be made within next 90 days after confirmation of acceptance of first partial shipment by OGDCL.
5. Technical bids will be evaluated strictly on the basis of TORs of this particular tender enquiry as well as track record of **Bidder, Manufacturer & Local Agent** and the bid will be declared technically non-responsive if the previous performance of any of the stated entities, all its associated subsidiary undertaking whether by way of common directorship , common management and control , share holding or direct or indirect control through directors prove to be unsatisfactory and accordingly stand disqualified from participating in OGDCL tenders or contracts.
6. An authority letter in original issued by the manufacturer for allowing the bidder to quote their product for this particular tender enquiry, duly signed/stamped, must be attached with the technical bid in case the bidder is not manufacturer.

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7. All the bidders must have to provide/ submit the **1 Kg sample** of the quoted product along with technical bids at the time of bid submission. The valid receipt/tracking details supplied through national / international courier services has to be accompanied with the bid. No sample will be accepted / entertained after 10 days of Technical Bid Opening if not provided along with the bid, and the bid will be rejected.
8. All the bidders must have to submit the lab evaluation report of their quoted product from any internationally reputed /recognized 3rd party laboratory, strictly as per technical specification sheet of the tender document, along with the technical bid.
9. The quantities of indented material can be increased or decreased at the time of finalization of case according to the requirement.
10. Prior to shipment of the material, if desired by OGDCL, the supplier of the product will be responsible for carrying out the inspection & Lab analysis of the material from the OGDCL approved inspecting agency/ Lab for confirmation of material as per tender specifications. The inspector will be hired by OGDCL. After physical inspection, one representative sample of the chemical will be dispatched by the inspectors directly to OGDCL. Later on its lab evaluation report will be submitted directly to OGDCL. After examination/ scrutiny, OGDCL will inform about acceptance / rejection of material/ report. Moreover if OGDCL intends to witness the TPI / visit the manufacturing facility, the vendor will be responsible to provide the "Invitation Letter" & facilitate the visit of the OGDCL inspection Team, however the expenditure incurred on such visit will be borne by OGDCL.
11. The (Fifty) 50% payment will be released after received & inspection of said chemical at OGDCL Base Store (KDS), Karachi and its final acceptance by OGDCL.
12. The final acceptance of the requisite consignment at the base store will be made after physical inspection of shipment & lab analysis of representative sample by OGDCL own or any other reputable lab of OGDCL choice for confirmation of material as per tender specifications and the supplier will be bound to accept the results.
13. Material must have to be lifted back by the vendor if found not as per technical specification of this particular tender enquiry even after its receipt at the base stores and have to replace with the material conforming to technical specifications with no cost to OGDCL.
14. Shipment is required to be made in containers for minimizing damages to the costly chemical.
15. If any of the information provided by the bidders proves wrong or any counterfeited/unlawful document is submitted to mislead department, OGDCL reserves the right to disqualify such bids without further assigning any reason. Such bidders will not be allowed to bid for any future procurement.

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2.8 HIGH-VISCOSITY POLYANIONIC CELLULOSE (PAC-HV)

- Product:** High-viscosity polyanionic cellulose (PAC-HV)
- Grade:** Regular
- Product Description:**
 - API Specification 13A – 18.1.1
PAC-HV, also referred to as API PAC regular grade, is a water-soluble polymer produced only from cellulose chemically reacted with carboxy-methyl (anionic) groups. The product obtained is further purified to significantly increase the active polymer content.
The product is a free-flowing and/or granular powder. See Table 17 for physical requirements.
 - API Specification 13A – 18.1.2
PAC-HV is widely used in water-based drilling fluid for a variety of applications, such as filtration control, viscosity and shale inhibition. Although field use can vary, this procedure focuses on filtration-control and viscosity-control characteristics.
- Product Physical Requirements:**
 - API Specification 13A – 18.1.7
To obtain the best handling in the field, it is recommended that the particle size for the PAC-HV powder be $\leq 0,8$ mm (≤ 20 mesh).
- Technical Requirements: Product Rejection**
 - API Specification 13A – 18.1.1
It shall not contain any other polysaccharides, such as starch, guar or other naturally occurring polymers or their derivatives.
 - API Specification 13A – 18.1.4
PAC-HV shall be free of any foreign polymer. Therefore, a qualitative starch determination shall be performed before the performance tests. If starch is found, no further testing should be performed and the sample shall be rejected.

Table 17 – PAC-HV physical requirements

Requirement	Standard
Presence of starch or starch derivatives	Absent
Moisture content	Maximum 10 %
Apparent viscosity	Minimum 50 cP
API filtrate volume	Maximum 23 ml

Note: General Shipping & Marking Requirements are listed in the General Requirements Section of this Purchasing Guideline

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18.2.3.10 Polymer-dosing device (Fann or OFI).

18.2.3.11 Test tube.

18.2.4 Procedure — Preparation of the iodine/iodide solution

18.2.4.1 To a 100 ml \pm 0,1 ml volumetric flask, add 10 ml \pm 0,1 ml of a 0,05 mol/l iodine solution.

18.2.4.2 Add 0,60 g \pm 0,01 g of potassium iodide (KI) and dissolve by gently swirling the volumetric flask.

18.2.4.3 Fill to the 100 ml mark with deionized water and mix thoroughly. Record the day of preparation.

18.2.4.4 The prepared iodine/iodide solution shall be stored in a sealed container, in a dark, cool, dry place and can be used for up to three months. After the date of expiration, the solution should be discarded and prepared again.

18.2.5 Procedure — Preparation of the PAC-HV solution and starch determination

18.2.5.1 Prepare a 1% solution of the water-soluble polymer under examination. Add 396 g \pm 0,1 g of deionized water to the container and add 4 g \pm 0,1 g of the water-soluble polymer under examination at a uniform rate over a time interval of 60 s to 120 s. The PAC-HV should be added into the vortex away from the impeller shaft to minimize dusting, preferably with a polymer-dosing device (18.2.3.10).

18.2.5.2 After stirring about 5 min \pm 0,1 min, remove the container from the mixer and scrape the sides of the mixing container with the spatula to remove or dislodge any polymer adhering to the container wall. Be sure that all the polymer clinging to the spatula is incorporated into the solution.

18.2.5.3 Measure the pH; if the pH value is less than 10, raise the pH to 10 by adding, drop-wise, dilute NaOH solution.

18.2.5.4 Replace the container on the mixer and continue to stir. Total mixing time shall equal 20 min \pm 1 min.

18.2.5.5 Put 2 ml of the polymer solution in a test tube and add, drop-wise, in portions of 3 drops at a time, up to 30 drops of iodine/iodide solution.

18.2.5.6 Three blank tests using only deionized water with 3 drops, 9 drops, and 30 drops, respectively, of iodine/iodide solution should be prepared for comparison.

18.2.5.7 After every 3 drop addition, swirl the test tube gently and compare the colour of the solution under examination with the blank tests. The colour comparison should be made against a white background.

18.2.6 Results — Starch test for PAC-HV

18.2.6.1 If the sample under examination gives a yellow colour comparable to one of the blank tests, the sample does not contain any starch or starch derivatives.

18.2.6.2 The development of any other colour is a strong indication of the presence of starch or starch derivatives.

18.2.6.3 Instant discolouration indicates the presence of a reducing agent; in this case, continue the drop-wise addition of the iodine/iodide solution.

18.2.6.4 If any colour-reaction is detected other than that mentioned under 18.2.1, the further testing shall be abandoned.

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18.2.3.10 Polymer-dosing device (Fann or OFI).

18.2.3.11 Test tube.

18.2.4 Procedure — Preparation of the iodine/iodide solution

18.2.4.1 To a 100 ml \pm 0,1 ml volumetric flask, add 10 ml \pm 0,1 ml of a 0,05 mol/l iodine solution.

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18.2.4.4 The prepared iodine/iodide solution shall be stored in a sealed container, in a dark, cool, dry place and can be used for up to three months. After the date of expiration, the solution should be discarded and prepared again.

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18.2.5.1 Prepare a 1 % solution of the water-soluble polymer under examination. Add 396 g \pm 0,1 g of deionized water to the container and add 4 g \pm 0,1 g of the water-soluble polymer under examination at a uniform rate over a time interval of 60 s to 120 s. The PAC-HV should be added into the vortex away from the impeller shaft to minimize dusting, preferably with a polymer-dosing device (18.2.3.10).

18.2.5.2 After stirring about 5 min \pm 0,1 min, remove the container from the mixer and scrape the sides of the mixing container with the spatula to remove or dislodge any polymer adhering to the container wall. Be sure that all the polymer clinging to the spatula is incorporated into the solution.

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18.2.5.7 After every 3 drop addition, swirl the test tube gently and compare the colour of the solution under examination with the blank tests. The colour comparison should be made against a white background.

18.2.6 Results — Starch test for PAC-HV

18.2.6.1 If the sample under examination gives a yellow colour comparable to one of the blank tests, the sample does not contain any starch or starch derivatives.

18.2.6.2 The development of any other colour is a strong indication of the presence of starch or starch derivatives.

18.2.6.3 Instant discolouration indicates the presence of a reducing agent; in this case, continue the drop-wise addition of the iodine/iodide solution.

18.2.6.4 If any colour-reaction is detected other than that mentioned under 18.2.1, the further testing shall be abandoned.

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18.3 Moisture content

18.3.1 Apparatus

- 18.3.1.1 Oven, regulated to $105\text{ }^{\circ}\text{C} \pm 3\text{ }^{\circ}\text{C}$ ($220\text{ }^{\circ}\text{F} \pm 5\text{ }^{\circ}\text{F}$)
- 18.3.1.2 Balance, accurate to $\pm 0,01\text{ g}$.
- 18.3.1.3 Evaporating dish.
- 18.3.1.4 Spatula.
- 18.3.1.5 Desiccator, with calcium sulfate (CAS Number 7778-18-9) desiccant, or equivalent.
- 18.3.1.6 Polymer-dosing device (Fann or OFI).

18.3.2 Procedure

- 18.3.2.1 Weigh $10\text{ g} \pm 0,1\text{ g}$ of the PAC-HV sample into a tared evaporating dish. Record the mass as m
- 18.3.2.2 Dry the sample in the oven for 4 h.
- 18.3.2.3 Cool the sample to room temperature in the desiccator.
- 18.3.2.4 Reweigh the evaporating dish containing the PAC-HV. Record the mass as m_2 .

18.3.3 Calculation.

Calculate the mass fraction moisture, w_6 , in percent, as given in Equation (45):

$$w_6 = 100 \frac{(m - m_2)}{m} \tag{45}$$

where

m is the sample mass, expressed in grams;

m_2 is the residue mass, expressed in grams.

Record the calculated value.

18.4 Filtrate volume

18.4.1 Reagents and materials

- 18.4.1.1 Sea salt, ASTM D1141-98 (2003).
- 18.4.1.2 API standard evaluation base clay, such as provided by API.
- 18.4.1.3 Potassium chloride (CAS Number 7447-40-7).
- 18.4.1.4 Sodium bicarbonate (CAS Number 144-55-8).
- 18.4.1.5 Deionized (or distilled) water.

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18.4.2 Apparatus

- 18.4.2.1 Thermometer, range 0 °C to 60 °C, $\pm 0,5$ °C (range 32 °F to 140 °F, $\pm 1,0$ °F).
- 18.4.2.2 Balance, accurate to $\pm 0,01$ g.
- 18.4.2.3 Mixer (e.g. Multimixer Model 9B with 9B29X impellers); each spindle is fitted with a single sine-wave impeller approximately 25 mm (1 in) in diameter, mounted flash side up.
- 18.4.2.4 Container, approximate dimensions: depth, 180 mm (7,1 in); d top, 97 mm (3-5/6 in); d bottom, 70 mm (2,75 in) (e.g. Hamilton Beach mixer cup No. M110-D).
- 18.4.2.5 Spatula.
- 18.4.2.6 Container, glass or plastic with stopper or lid for salt solutions.
- 18.4.2.7 Viscometer, motor-driven, direct-indicating, in accordance with ISO 10414-1.
- 18.4.2.8 Timers, two, mechanical or electrical, accurate to $\pm 0,1$ min over the test interval.
- 18.4.2.9 Filter press, low-pressure/low-temperature, in accordance with ISO 10414-1:2008, Clause 7.
- 18.4.2.10 Graduated cylinders, one 10 ml $\pm 0,1$ ml and one 500 ml ± 5 ml.
- 18.4.2.11 Polymer-dosing device (Fann or OFI).

18.4.3 Procedure — Filtrate volume of the PAC-HV

- 18.4.3.1 Add 42 g $\pm 0,01$ g of sea salt to 1 l ± 2 ml of deionized water.
- 18.4.3.2 To 358 g of the sea salt solution, add 35,0 g $\pm 0,01$ g of potassium chloride (KCl).
- 18.4.3.3 After stirring 3 min $\pm 0,1$ min, add 1,0 g $\pm 0,01$ g of sodium bicarbonate.
- 18.4.3.4 After stirring 3 min $\pm 0,1$ min, add 28,0 g $\pm 0,01$ g of the API standard evaluation base clay.
- 18.4.3.5 After stirring 5 min $\pm 0,1$ min, remove the container from the mixer and scrape its side with the spatula to dislodge any material adhering to the container wall. Be sure that all material clinging to the spatula is incorporated into the suspension.
- 18.4.3.6 Replace the container on the mixer and continue to stir an additional 5 min $\pm 0,1$ min.
- 18.4.3.7 Weigh 1,0 g $\pm 0,01$ g of PAC-HV.
- 18.4.3.8 Add the PAC-HV slowly at a uniform rate over a time interval of about 60 s while stirring on the mixer. The PAC-HV should be added away from the impeller shaft but in the vortex to minimize dusting, preferably by means of a polymer-dosing device (18.4.2.11).
- 18.4.3.9 After stirring 5 min $\pm 0,1$ min, remove the container from the mixer and scrape its side with the spatula to dislodge any PAC-HV adhering to the container walls. Be sure that all PAC-HV clinging to the spatula is incorporated into the suspension.
- 18.4.3.10 Replace the container on the mixer and continue to stir. If necessary, the container may be removed from the mixer and the sides scraped to dislodge any adhering PAC-HV after another 5 min and 10 min. Total mixing time elapsed from the beginning of PAC-HV addition shall equal 20 min ± 1 min.

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18.4.3.11 Age the suspension for $16 \text{ h} \pm 0,5 \text{ h}$ in a sealed or covered container at $25 \text{ }^\circ\text{C} \pm 1 \text{ }^\circ\text{C}$ ($77 \text{ }^\circ\text{F} \pm 2 \text{ }^\circ\text{F}$). Record the storage temperature and storage duration.

18.4.3.12 After ageing, stir the suspension on the mixer for $5 \text{ min} \pm 0,1 \text{ min}$.

18.4.3.13 Pour the PAC-HV suspension into a filter press cell. Before adding the suspension, be sure that each part of the filter cell is dry and that none of the gaskets is distorted or worn, in accordance with ISO 10414-1. The temperature of the suspension shall be $25 \text{ }^\circ\text{C} \pm 1 \text{ }^\circ\text{C}$ ($77 \text{ }^\circ\text{F} \pm 2 \text{ }^\circ\text{F}$). Pour the suspension to within about 13 mm (0,5 in) of the top of the cell. Complete the assembly of the filter press cell. Place the filter cell in the frame and close the relief valve. Place a container under the drain tube.

18.4.3.14 Set one timer for $7,5 \text{ min} \pm 0,1 \text{ min}$ and the second timer for $30 \text{ min} \pm 0,1 \text{ min}$. Start both timers and adjust the pressure on the cell to $690 \text{ kPa} \pm 35 \text{ kPa}$ ($100 \text{ psi} \pm 5 \text{ psi}$). The pressure shall be supplied by compressed air, nitrogen or helium and applied within 15 s.

18.4.3.15 After $7,5 \text{ min} \pm 0,1 \text{ min}$ on the first timer, remove the container and any liquid adhering to the drain tube and discard. Place a dry 10 ml graduated cylinder under the drain tube and continue collecting the filtrate to the end of the second timer set at 30 min. Remove the graduated cylinder and record the volume of the filtrate collected.

18.4.4 Calculation — Filtrate volume of the PAC-HV

Calculate the filtrate volume, V , expressed in millilitres, from Equation (46):

$$V = 2 \cdot V_c \quad (46)$$

where V_c is the filtrate volume collected, expressed in millilitres, between 7,5 min and 30 min.

18.5 Fluid apparent viscosity

18.5.1 Procedure — Fluid apparent viscosity

18.5.1.1 Add 42 g \pm 0,01 g of sea salt to 1 l \pm 2 ml of deionized water.

18.5.1.2 To 358 g of the sea salt solution, add 35,0 g \pm 0,01 g of potassium chloride (KCl).

18.5.1.3 Weigh 3,0 g \pm 0,01 g of PAC-HV. Add the PAC-HV slowly at a uniform rate over a time interval of about 1 min while stirring on the mixer. The PAC-HV should be added away from the impeller shaft but in the vortex to minimize dusting.

18.5.1.4 After stirring $5 \text{ min} \pm 0,1 \text{ min}$, remove the container from the mixer and scrape its side with the spatula to dislodge any material adhering to the container wall. Be sure that all material clinging to the spatula is incorporated into the suspension.

18.5.1.5 Replace the container on the mixer and continue to stir. If necessary, the container may be removed from the mixer and the sides scraped to dislodge any adhering PAC-HV after another 5 min and 10 min. Total mixing time elapsed from beginning of the PAC-HV addition shall equal $20 \text{ min} \pm 1 \text{ min}$.

18.5.1.6 Age the suspension for $16 \text{ h} \pm 0,5 \text{ h}$ in a sealed or covered container at $25 \text{ }^\circ\text{C} \pm 1 \text{ }^\circ\text{C}$ ($77 \text{ }^\circ\text{F} \pm 2 \text{ }^\circ\text{F}$). Record the storage temperature and storage duration.

18.5.1.7 Stir the suspension on the mixer for $5 \text{ min} \pm 0,1 \text{ min}$.

18.5.1.8 Pour the suspension into the viscometer cup provided with the direct-indicating viscometer. The dial reading at the 600 r/min rotor speed setting of the viscometer shall be taken at a suspension test temperature of $25 \text{ }^\circ\text{C} \pm 1 \text{ }^\circ\text{C}$ ($77 \text{ }^\circ\text{F} \pm 2 \text{ }^\circ\text{F}$).

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18.5.2 Calculation — Fluid apparent viscosity

Calculate the test fluid viscosity, ν_A , expressed in centipoise from Equation (47):

$$\nu_A = \frac{R_{600}}{2} \tag{47}$$

where R_{600} is the viscometer dial reading at 600 r/min

Record the calculated value.