DATSCO RESOURCES INC.

OIL WELL CEMENT ADDITIVES

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DATSCO RESOURCES INC.

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Chemicals for Cement Slurry

1. Early Strength Additive(Accelerator)

G204 Early Strength Additive for Oil Well Cement

G204 can stabilize and strengthen low density cement slurry through bridging and changing concentration of ion in cement slurry.

CHARACTERISTICS

- G204 mainly consists of inorganic early strength materials;
- Appearance: flow-ability powder non-poisonous, non-odor.
- Normal dosage: 1.0%~5.0% (BWOC).
- Suitable for wells whose temperature is between 30℃~90℃(BHCT).
- Can decrease free fluid and volume contraction in low density cement slurry, to stabilize and enhance the strength.
- It has obvious effect of early strength. The strength of cement is more than 6mPa after 24 hours.
- Can be used in ultra low density cement slurry system (less than 1.65 g/cm^3±0.01g/cm^3).
- Suitable for low density cement slurry of fly ash, normal oil well cement, and low density cement slurry of glass micro-spheres
- Contributes to early strength of conventional proportion cement slurry.
- Preferred to be mixed without water.
-

TECHNICAL SPECIFICATION

• Appearance		White or light yellow powder
• Water content,%		≤8.0
• Fineness (0.315mm mesh),%		≤15.0
• Initial consistency , Bc		≤30
• Thickening time, min/50℃,25.9mPa,32min		≤Base slurry
• Compression strength, mPa/50℃	24h	≥6.0
	48h	≥8.0

Test condition: G class cement: micro-spheres: silica fume=100:10:5(m/m); W/S (water to

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solid): 0.70; dosage of G204: 2.0%(BWOS); water quality: distilled water.

PACKAGING AND STORAGE

- Be sacked with three-layer plastics bag, 25kg per bag.
- Be kept away from moisture in store and transportation.
- Storage life time is two years

G209 Early Strength Additive for Oil Well Cement

G209 can change ion concentration in cement hydrate to accelerate the acting of C_3S、C_3A and forming of calcium aluminous stone. So it can densify the structure and enhance early strength.

CHARACTERISTICS

- G209 main consists of inorganic compound.
- Density: 1.85 g/cm^3±0.05g/cm^3.
- Normal dosage: 1.5%～4.0%(BWOC).
- Suitable temperature :28℃～110℃（BHCT）.
- Suitable for low and conditional density cement slurry.
- Suitable for low density cement slurry of fly ash, normal oil well cement and low density cement slurry of glass micro-spheres.
- Preferred to mix with water.

TECHNICAL SPECIFICATION

Appearance	Earth-yellow powder or particles
Fineness (0.315mm sieve),%	≤15.0
Thickening time ratio	≤0.5
Initial consistency , Bc/32℃,8.3mPa	≤30
Compression strength , mPa/39℃,normal pressure,6h	≥4.0
Compression strength ratio, mPa/39℃,normal	≥1.0

Note 1: The thickening time ratio refers to the thickening time of cement slurry with early strength agent

and the thickening time of pure cement slurry.

Note 2: Compression strength ratio refers to the compression strength of cement with early strength agent

The ingredient of cement slurry in the table is: G class cement, W/C：0.44, G209:2.0%(BWOC), water quality: distilled water.

PACKAGING AND STORAGE

- Be sacked with three-layer plastics bag, 25kg per bag.
- Be kept away from moisture, Stored in cool and dry situation.

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- Storage life time is two years.

2. Fluid Loss Control Additives

G306 Fluid Loss Additive for Oil Well Cement（PVA Type）

G306 can control fluid loss through forming tight polymer film and enhancing viscosity of water phase.

CHARACTERISTICS

- G306 consists of water-dissolved macromolecules and reinforcing materials.
- It's non-odor, no environment pollution.
- Normal dosage: 0.8%-2.0% (BWOC).
- Suitable circulate temperature: up to 120℃(250℉).
- It's preferred to mix without water.
-

TECHNICAL SPECIFICATION

Appearance	White flow-ability powder
Water content,%	≤8.0
Fineness (0.315mm mesh),%	≤15.0
Initial consistency , Bc/80℃,46.5mPa,45min	≤30
Mutation value of thickening curve， Bc	≤10
Transition time, min	≤40
Fluid loss, ml/80℃,6.9mPa,30min	≤150
Compression strength, mPa/102℃,0.1mPa,24h	≥14

The ingredient of the cement slurry in the table is: G class cement, W/C: 0.44; G306: 1.2% (BWOC); USZ: 0.3%(BWOC) ; water quality: distilled water

PACKAGING AND STORAGE

- Sacked with three-layer plastics bag, 25kg per bag.
- Be kept away from moisture and possible damage of the packages in transportation, and be stored in cool and dry situation.
- Storage life time is two years.

G310 Fluid Loss Additive for Oil Well Cement

As the aggregated molecule chain of water soluble polymer can decrease the mud cake permeability of mud slurry, G310 introduces multi-functional groups that enhance the ability of anti-high temperature and anti-salt.

CHARACTERISTICS

- G310 made of low molecular weight amides, polyhydroxy carboxylic acid.
- Temperature range: up to 200℃(392℉)
- Salt Resistance: fresh to saturated water
- Solubility: soluble
- Dosage: 3％~6％(BWOC)
- Solubility with cement: applicable for any cement classes
- Stability: free water approach zero
- Thickening time: thickening curve approach a right-angle
- Density range: any density of cement slurry system
- It has a certain retarding effect, using the available coagulant under the low temperature conditions, early strength additive to adjust thickening time.

TECHNICAL SPECIFICATION

Appearance	Viscous liquid
Initial consistency , BC	≤30
Thickening linear	Normal
Time of 40Bc~100Bc, min	≤40
Fluid loss, ml/176℉, 6.9MPa 30min	≤150
Thickening time ,ml/176℉, 40MPa,40min	≥60
Compression strength, MPa/176℉. Normal pressure. 24h	≥14

The ingredients of the cement in the table are: G class cement, W/C: 0.44;water quality: distilled water; dosage G310: 5.0％(BWOC).

PACKAGING AND STORAGE

- Be stored in 25L plastic barrel, 25kg/barrel.
- Be kept away from moisture and possible damage of the packages at transportation; be stored in cool and dry situation. Storage life time is one year.

G31S Fluid Loss Additive for Oil Well Cement

The agent as the main monomer is AMPS water-soluble polymers. By molecular beam chain aggregation reduces the slurry cake permeability. The polymer dispersion is strong, resistant to high temperatures and salt.

CHARACTERISTICS

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- G31S polymerization modifier made of AMPS, low molecular weight amides, polyhydroxy carboxylic acid.
- Temperature resistance: up to 160℃(320℉)
- Salt Resistance: fresh to saturated water
- Filtration property：< 100ml API FL
- Solubility：soluble
- Dosage：0.5％~1.2％(BWOC)
- Compatibility: good
- Solubility with cement: any class of cement
- Well cement stability, free fluid is close to zero.
- Slurry thickening transition time is short, close to a right angle thickening.
- Density range: any density of cement slurry
- Has a certain retarding property on the cement slurry.

TECHNICAL SPECIFICATION

Appearance	Grayish white powder or granules
Moisture, ％	≤8.0
Fineness (0.315mm shorts), ％	≤0.50
Initial consistency, Bc/80℃.	≤30
Thickening linear	Normal
Time of 40Bc~100Bc, min	≤40
Loss of water, ml/80℃.6.9MPa. 30min	≤150
Free fluid, ％	≤1.4
Compression strength, MPa/102℃.	≥14

The ingredients of the cement in the table are： G class cement 800g; water 352ml; dosage 0.8％G31S.

PACKAGING AND STORAGE

- Sacked with three-layer plastics bag, 25kg/bag.
- Be kept away from moisture and possible damage of the packages in transportation, and stored in cool and dry situation. Storage life time is two years.

G32S Fluid Loss Additive for Oil Well Cement

The agent as the main monomer is AMPS water-soluble polymers. By molecular beam chain aggregation reduces the slurry cake permeability. The polymer dispersion is strong, resistant to high temperatures and salt.

CHARACTERISTICS

- G32S polymerization modifier made of AMPS, low molecular weight amides,

polyhydroxy carboxylic acid.

- Salt Resistance: fresh to saturated water
- Filtration property：< 100ml API FL
- Solubility：soluble
- Dosage：0.5％~1.2％(BWOC)
- Compatibility: good
- Solubility with cement: any class of cement
- Well cement stability, free fluid is close to zero.
- Slurry thickening transition time is short, close to a right angle thickening.
- Density range: any density of cement slurry
- Has a certain retarding property on the cement slurry.

TECHNICAL SPECIFICATION

Appearance	Grayish white powder or granules
Moisture, ％	≤8.0
Fineness (0.315mm mesh), ％	≤15
Initial consistency, Bc/80 ℃ .	≤30
Thickening linear	Normal
Time of 40Bc~100Bc, min	≤40
Loss of water, ml/80℃.6.9MPa. 30min	≤150
Free fluid, ％	≤1.4
Compression strength, MPa/102 ℃ .	≥14

The ingredients of the cement in the table are：G class cement 800g; water 352ml; dosage 1.2％

PACKAGING AND STORAGE

- Sacked with three-layer plastics bag, 25kg/bag.
- Be kept away from moisture and possible damage of the packages in transportation, and stored in cool and dry situation. Storage life time is two years.

G33S Fluid Loss Additive for Oil Well Cement

The agent as the main monomer is AMPS water-soluble polymers. By molecular beam chain aggregation reduces the slurry cake permeability. The polymer dispersion is strong, resistant to high temperatures and salt.

CHARACTERISTICS

- G33S polymerization modifier made of AMPS, low molecular weight amides, polyhydroxy carboxylic acid.

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- Temperature resistance: up to 200℃(392℉)
- Salt Resistance: fresh to saturated water
- Filtration property：< 100ml API FL
- Solubility：soluble
- Dosage：1％~3％(BWOC)
- Compatibility: good
- Solubility with cement: any class of cement
- Well cement stability, free fluid is close to zero.
- Slurry thickening transition time is short, close to a right angle thickening.
- Density range: any density of cement slurry
- Has a certain retarding property on the cement slurry.

TECHNICAL SPECIFICATION

Appearance	Grayish white powder or granules
Moisture, ％	≤8.0
Fineness (0.315mm mesh), ％	≤0.50
Initial consistency, Bc/80℃.	≤30
Thickening linear	Normal
Time of 40Bc~100Bc, min	≤40
Loss of water, ml/80℃.6.9MPa. 30min	≤150
Free fluid, ％	≤1.4
Compression strength, MPa/102℃.	≥14

The ingredients of the cement in the table are： G class cement 800g; water 352ml; dosage

PACKAGING AND STORAGE

- Sacked with three-layer plastics bag, 25kg/bag.
- Be kept away from moisture and possible damage of the packages in transportation, and stored in cool and dry situation. Storage life time is two years.

G34S Fluid Loss Additive for Oil Well Cement(FL-34)

G34S belongs to pure polymerization and water-soluble agent , reduces the slurry cake permeability by the aggregation of water-soluble high polymer molecular chain. And a variety of functional groups are introduced into the polymer to enhance the anti-high temperature property and salt resistance.

CHARACTERISTICS

- G34S is polymerized by AMPS, low molecular amide, auxiliary solvent,etc.

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- Temperature range: up to 200℃(392℉).
- Salt Resistance: fresh water until saturated brine.
- Water solubility: dissolved in water easily.
- Filtration property: ＜80ml API FL
- Generally dosage range: 0.5~1.5% (BWOC)
- Good compatibility with other additives.
- Compatibility with cement: suitable for all levels of oil well cement.
- The cement slurry thickening transition time is short, close to right angle thickening.
- Suitable for low, conventional and high density cement slurry system .
- Having a little retarding property to the cement slurry.
-

TECHNICAL SPECIFICATION

Appearance	White or yellowish powder or particles
Water content,%	≤8.0
Fineness (0.315mm sieve),%	≤15.0
Initial consistency , Bc/80℃,46.5MPa,45min	≤30
Mutation value of thickening curve， Bc	≤10
40Bc ~ 100Bc time, min	≤40
Fluid loss, ml/80℃,6.9MPa,30min	≤80
Free liquid,%	≤1.4
Compression strength, Mpa/102℃,21Mpa,24h	≥14

The ingredient of the cement in the table is: JiaHua G class cement:800g+ tap-water:352ml, Dosage of G34S: 0.8% (BWOC).

PACKAGING AND STORAGE

- Sacked with three-layer plastics bag, 25kg per bag
- Be kept away from moisture and possible damage of the packages in transportation, and stored in cool and dry situation. Storage life time is two years.

G35S Mid-Low Temperature Fluid Loss Additive for Oil Well Cement

G35S belongs to pure polymerization and water-soluble agent, reducing the slurry cake permeability by the aggregation of water-soluble high polymer molecular chain. And a variety of functional groups are introduced into the polymer to enhance the performance of high temperature resistance and salt resistance. At the same time, G35S has good suspension property.

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CHARACTERISTICS

- G35S is polymerized by AMPS, low molecular amide, auxiliary solvent, etc.
- Temperature Range: up to 200℃(392℉).
- Salt Resistance: fresh water to saturated brine.
- Water solubility: completely soluble in water.
- Filtration: ＜80ml API FL
- Generally dosage range: 0.5~1.2% (BWOC)
- Good compatibility with other additives.
- Compatibility with cement: suitable for all levels of oil well cement.
- The cement slurry thickening transition time is short, close to right angle thickening.
- Suitable for low, conventional and high density cement slurry system .
- Mild retarder to the cement slurry.

TECHNICAL SPECIFICATION

Appearance	White or yellowish powder or particles
Water content,%	≤8.0
Fineness (0.315mm sieve),%	≤15.0
Initial consistrency , Bc/80℃,46.5MPa,45min	≤30
Mutation value of thickening curve， Bc	≤10
40Bc ~ 100Bc time,min	≤40
Fluid loss,ml/80℃,6.9MPa,30min	≤80
Free liquid,%	≤1.4
Compression strength, Mpa/102℃,21Mpa,24h	≥14

PACKAGING AND STORAGE

- Sacked with three-layer plastics bag, 25kg per bag
- Be kept away from moisture and possible damage of the packages in transportation, and stored in cool and dry situation.
- Storage life time is two years.

3. Expanding Additive for Oil Well Cement

G401 Expanding Additive for Oil Well Cement(Microbond)

G401 can compensate for cement slurry (paste) shrinkage and produce volume micro

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expansion because of cement hydration products crystal expansion, which is conducive to the channeling. It compresses cement paste pore and improve pore distribution to increase strength and decrease permeability. The bond strength of the cement sheath is improved in the confined state of prestressed products, which is benefit for preventing the corrosion of casing and cement paste and controlling circulation. G401 has good compatibility with other additives and does not affect other properties of cement slurry. G401 also has a wide range of temperature (25℃～150℃) and good resistance to salt.

CHARACTERISTICS

- Normal dosage: 2%~3% (BWOC).
- Increase early strength of cement stones obviously and has no harmful influence on thickening time, rheology, free liquid.
- Suitable for cement slurry with normal and low density.
- Applicable for the wells with irregular diameter of wells and enlarged well holes, with preventing the gas migration of balance cementing in deep wells, with high pressure cementing.
- Non-poisonous, non-odor and preferred to be mixed without water.

Items		Specification
Appearance		Gray white powder or
Thickening time, min/65℃,35MPa,30min		≤120
The expansion rate of cement slurry （Ex - Ex0）,%	Plastomer（75℃,0.1mPa）	≥0.10
	Hardened body	0.01≤Ex-Ex0≤0.8
Compression strength, mPa/75℃,0.1mPa,24h		≥14
Note 1: Test conditions are: G grade oil well cement, W/C=0.44, product mix accounted for 2% of the quality of cement (weight); Note 2: Plastic expansion rate of expansion rate of cement paste when the initial setting; Note 3:Ex0 is the expansion ratio of the slurry (paste) when the product is not incorporated. Ex is the expansion ratio of the slurry when the product is incorporated.		

TECHNICAL SPECIFICATION

The ingredient of cement slurry in the table is: G class cement, W/C: 0.44; G401: 2.0% (BWOC); water quality: distilled water.

PACKAGING AND STORAGE

- Be sacked with three-layer plastics bag, 25kg per bag.
- Be kept away from moisture and possible damage of the packages in transportation.

Storage life time is two years.

QJ-625 Expanding Additive for Oil Well Cement

QJ-625 can form slight bubbles which distribute uniformly in cement slurry to compensate

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pressure decrease which results from jellification weightlessness and hydrating volume contraction, and enhance cementing strength of cement. Therefore, it can prevent oil, gas and water from migrating efficiently.

CHARACTERISTICS

- Non-poisonous or non-odor;
- It is compounded by foamer, foam stabilizer and fluid loss control additive.
- Normal dosage: 0.3%～0.6%(BWOC).
- Suitable temperature: 25℃～150℃ .
- It can produce little and well-distributed foam steadily; moreover, the foaming time is controllable.
- No harmful on thickening time, rheological properties and free fluid control of cement slurry. Enhance compression strength obviously.
- Suitable for cement slurry with normal and low density.
- Particularly, it is suitable for boreholes which have irregular or enlarged holes' diameter. It can also apply to well control and anti-migration in pressure balanced cementing of deep wells and adjusted wells, as well as cementing wells with high pressure and active oil and gas.
- More ideal expanding result can be achieved by mixing it without water instead of mixing with water.
-

TECHNICAL SPECIFICATION

• Appearance	Gray-black small particles or powder
• Residue(0.420mm screen),%	≤10
• Initial foaming time, min/35℃	≥40
• Expansion ratio ,%/75℃	≥25
• Thickening time,75℃,40mPa,40min	≥Base slurry
• Compression strength, mPa/93℃,21 mPa,8h	≥10.3

The ingredient of the cement slurry in the table is: JG class cement, W/C 0.44; QJ-625: 0.5%(BWOC).
Water quality: distilled water.

PACKAGING AND STORAGE

- Be sacked with three-layer plastics bag, 25kg per bag.
- Be kept away from acid, alkali and moisture.
  Storage life time is two years.

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4. Retarder for Oil Well Cement

GH-I Medium Temperature Retarder for Oil Well Cement

GH-I can stick on the surfaces of cement hydrate to inhibit contacting between cement and water, also stick on the surfaces of crystal nucleons to prevent their enlarging. So it can retard hydrating of cement slurry.

CHARACTERISTICS

- GH-I consists of various kinds of compounds, such as cellulose derivative and hydroxycarboxylic acid.
- Non-poisonous, non-odor, and non-corrosion.
- Normal dosage: 0.1% ～1.0% (BWOC). It is more efficient if it is used combining with USZ friction reducing additive when middle-deep well is cemented. It can reduce the consistency of cement slurry and improve the rheology.
- It can reduce the consistency of cement slurry and improve the rheology.
- It can enhance the thickening time efficiently.
- Generally used in oil wells whose circulate temperature under bore is below 110℃.
- Preferred to be mixed without water.
-

TECHNICAL SPECIFICATION

Appearance	Light yellow powder
Water content,%	≤10.0
Fineness (0.315mm mesh),%	≤10.0
Initial consistency , Bc	≤30
Mutation value of thickening curve， Bc	≤10
Thickening time/120℃.73.9mPa.61min	Adjustable
Free liquid,%	≤1.4
Compression strength, mPa/144℃,21mPa,48h	≥14

The ingredient of the cement slurry is: G class cement ,W/C 0.44,GH-I: 0.1%～1.0% ,water quality: distilled water.

PACKAGING AND STORAGE

- Be sacked with three-layer plastics bag, 25kg per bag
- Be kept away from moisture and possible damage of the packages in transportation, and can be stored in cool and dry situation.
- Storage life time is two years.

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GH-II High Temperature Retarder for Oil Well Cement

This retarder can stick on the surfaces of cement hydrate to inhibit contacting between cement and water, also stick on the surfaces of crystal nucleons to prevent their enlarging. So it can retard hydrating of cement slurry.

CHARACTERISTICS

- GH-Ⅱ consists of various kinds of compounds, such as cellulose derivative and hydroxycarboxylic acid.
- Normal dosage: 0.1%～1.0% (BWOC).
- Suitable temperature:110℃~170℃(BHCT).
- It is used in the medium-deep and deep well.
- It can prolong the thickening time effectively and increase the pumped time.
- It can formulate a right angle thickening cement slurry system.
- It can reduce the consistency of cement slurry and improve the rheology.
- It is preferred to be mixed without water. Heated by steam if the wet mix is needed.
-

TECHNICAL SPECIFICATION

Appearance	Brown powder
Water content,%	≤10.0
Fineness (0.315mm mesh),%	≤10.0
Initial consistency , Bc	≤30
Mutation value of thickening curve， Bc	≤10
Thickening time, 120℃, 73.9mPa, 61min	Adjustable
Free liquid,%	≤1.4
Anti-compression strength,	≥14

The ingredient of cement slurry in the table is: G class cement 594g + silica sand 208g (160 mesh ~200mesh) + distilled water 333g+GH-IIagent 0.1%～1.0% (BWOS)+G33S agent 1.5%(BWOS)+ USZ agent 0.4%(BWOS)

PACKAGING AND STORAGE

- Be sacked with three-layer plastics bag, 25kg per bag.
- Be kept away from moisture and possible damage of the packages during transportation, and it can be stored in cool and dry situation.
- Storage life time is two years.

GH-6 Medium Temperature Retarder for Oil Well Cement

GH-6 can stick on the surfaces of cement hydrate to inhibit contacting between cement and water, also stick on the surfaces of crystal nucleons to prevent their enlarging. So it can retard

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hydrating of cement slurry.

CHARACTERISTICS

- GH-6 consists of various kinds of compounds, such as gluconate and hydroxycarboxylic acid.
- Density:1.08g/cm^3.
- It is non-poisonous, non-odor, and non-corrosion.
- Normal dosage: 0.06% ~1.0% (BWOC). The amount can be appropriately increased with the increase of temperature
- It can reduce the consistency of cement slurry and improve the rheology.
- Retard the thickening time efficiently.
- Generally used in oil wells whose circulate temperature under bore is between 75℃and 115℃.
- GH-6 is sensitive, so the dosage should be accurately measure.
-

TECHNICAL SPECIFICATION

Appearance	Colorless or light yellow liquid
Density，g/cm^3（20℃±1℃）	1.12±0.03
Thickening time/80℃.46.5Mpa.45min	≥120
Initial consistency , Bc	≤30
Mutation value of thickening curve，Bc	≤10
Thickening time extension value, min	≥ 60
Sensitivity of increase,%	≤ 25
Sensitivity of temperature,%	≤20
Transition time, min	≤40
Free liquid,%	≤1.4
Compression strength, mPa/102℃,21mPa,24h	≥14

The ingredient of the cement slurry in the table is: G class cement, W/C 0.44; 0.1% GH-6; 0.5%USZ(BWOC); 0.5% G301(BWOC).Water quality: distilled water

PACKAGING AND STORAGE

- Be stored in 25L plastic drums, 25kg/drum.
- Be kept away from moisture and possible damage of the packages in transportation, and can be stored in cool and dry situation.
- Storage life time is one year.

GH-8/S Retarder for High Temperature Oil Well Cement

GH-8 can stick on the surface of cement hydrate to inhibit contacting between cement and

water, also stick on the surface of crystal nucleons to prevent their enlarging. So it can retard hydrating of cement slurry.

CHARACTERISTICS

- GH-8 consists of various kinds of compounds, such as gluconate and low molecular weight organic acids.
- It is non-poisonous, non-odor, and non-corrosion.
- Normal dosage: 0.5% ~2.0% (BWOS). The amount can be appropriately increased with the increase of temperature
- It can reduce the consistency of cement slurry and improve the rheology.
- Retard the thickening time efficiently.
- Generally used in oil wells whose circulate temperature under bore is between 110℃and 160℃.

TECHNICAL SPECIFICATION

Items	Specification	
	Solid	Liquid
Appearance	White powder	Colorless liquid
Thickening time	Adjustable	
Initial consistency ,	≤30	
Mutation value of thickening curve，Bc	≤10	
Transition time, min	≤40	
Free liquid,%	≤1.4	
Compression strength,	≥14	

The ingredient of cement slurry in the table is: G class cement 594g + silica sand 208g (160 mesh~200mesh) +G301 agent 1.0%(BWOS)+ distilled water 333g+GH-8 agent 1.0%～2.5%(BWOS) .

PACKAGING AND STORAGE

- The solid be sacked with three-layer plastics bag, 25kg per bag; the liquid be packed in plastic drums, 25 Kg per drum.
- Be kept away from moisture and possible damage of the packages during transportation, and it can be stored in cool and dry situation.
- Storage life time of solid product is two years; storage life time for the liquid product is one year.

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GH-9 Retarder for High Temperature Oil Well Cement

GH-9 dissolves in water quickly owing to its strong hydrophilic property. It can absorb on the surface of the cement slurry hydrate to inhibit contact with water and chelate with Ca^{2+} to prevent crystal nucleus forming early. Therefore, it can retard thickening time. And it can enhance the last strength of the cement stone because C_3A shows weak adsorption performance.

CHARACTERISTICS

- GH-9 consists of sulfonates and organic salts.
- The density is about1.20g/cm^3.
- Normal dosage: 0.3%~2.5%(BWOC).
- Suitable temperature: 60℃~180℃(BHCT).
- It is used in the medium and deep well. It can prolong the thickening time effectively and increase the pumped time. It can formulate a right angle thickening cement slurry system.
- If there is a settlement phenomenon happened to the cement slurry because of its strong dispersion performance, the appropriate amount of G302 (oil well cement fluid loss additive) can be added to the cement slurry.
-

TECHNICAL SPECIFICATION

Appearance	Colorless to light red liquid
Density，g/cm^3〔（20±1）℃〕	1.22±0.03
Thickening time, 90℃/53.3mPa/49，min	≥120
Initial consistency , Bc	≤30
Mutation value of thickening curve，Bc	≤10
Thickening time extension value, min	≥ 60
Sensitivity of increase,%	≤ 25
Sensitivity of temperature,%	≤20
Transition time, min	≤40
Free liquid, 90℃,%	≤1.4
Compression strength, mPa/113℃/20.7mPa/24h	≥14

The ingredient of cement slurry in the table is: G class cement800g + distilled water 352g+GH-9 agent 0.4%+G301 agent 1.0%+G401 agent 1.5%.

PACKAGING AND STORAGE

- Be stored in 25L plastic drums, 25kg/drum.
- Be kept away from moisture; be stored in cool and dry situation.
- Storage life time is one year.

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GH-9S High Temperature Retarder for Oil Well Cement

GH-9S dissolves in water quickly owing to its strong hydrophilic property. It can absorb on the surface of the cement slurry hydrate to inhibit contact with water and chelate with Ca^{2+} to prevent crystal nucleus forming early. Therefore, it can retard thickening time. And it can enhance the last strength of the cement stone because C_3A shows weak adsorption performance.

CHARACTERISTICS

- GH-9S consists of sulfonate and organic salts.
- Appearance: White particles.
- Density is 1.85 g/cm^3±0.03g/cm^3.
- Normal dosage: 0.1%~1.0%(BWOC).
- Suitable temperature:60℃~180℃(BHCT).
- It is used in the medium and deep well. It can prolong the thickening time effectively and increase the pumped time. It can formulate a right angle thickening cement slurry system.
- If there is a settlement phenomenon happened to the cement slurry because of its strong dispersion performance, the appropriate amount of G302 (oil well cement fluid loss additive) can be added to the cement slurry.
-

TECHNICAL SPECIFICATION

Appearance	White particles
Water content,%	≤8.0
Fineness (0.315mm mesh),%	≤10.0
Thickening time min	Adjustable
Initial consistency , Bc/120℃,73.9mPa,61min	≤30
Transition time, min	≤40
Mutation value of thickening curve, Bc	≤10
Free liquid,%	≤1.4
Compression strength, mPa/144℃,21mPa,48h	≥14

The ingredient of cement slurry in the table is: G class cement 594g + silica sand 208g (160 mesh~200mesh) + distilled water 333g+GH-9S agent 0.9%+G401agent 1.2%.

PACKAGING AND STORAGE

- Be sacked with three-layer plastics bag, 25kg per bag.
- Be kept away from moisture, Stored in cool and dry situation.
- Storage life time is two years.

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5. Dispersant（Drag Reducer）

UPV-L Dispersant for Oil Well Cement

UPV-L drag reducer (dispersant) can adjust the electric charge on the surfaces of cement particles to get proper cement rheology. As a result, it can reduce pump pressure, enhance drilling efficiency and used in construction easily.

CHARACTERISTICS

- UPV-L is modified by USZ.
- Density: 1.22g/cm^3.
- The normal dosage is 0.6%~3.0% USZ (BWOC), and it is not confined to this range in some particular case.
- Dissolve easily
- Increasing additive dosage, it can adjust the rheology of the cement slurry effectively, and reduce the consistency;
- With good high temperature resistance, it can be used within 30℃~150℃ (BHCT).
- Consolidate cement stones, and enhance its compression strength and control fluid loss.
- It has a certain retarding property.
- It can be mixed with or without water.
- It has good compatibility with other additives.

TECHNICAL SPECIFICATION

Appearance		Reddish-brown liquid
Rheological properties 85℃,0.1MPa,20min	n	≥0.5
	k,Pa.sn	≤0.7
Initial consistency, Bc/85℃,70.3mPa,44min		≤20
Thickening time ratio/85℃,70.3mPa,44min		1.0-2.0
Compression strength ratio/110℃,21mPa,24h		≥0.80

The ingredient of the cement slurry in the table is: G class cement, W/C:0.44, UPV-L :1.5%(BWOC), water quality: distilled water.

PACKAGING AND STORAGE

- It can be sacked with plastics drums, 25kg per drum.
- Be kept away from moisture and possible damage of the packages in transportation, and stored in cool and dry situation.
- Storage life time is one year.

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USZ Dispersant for Oil Well Cement（CFR-3™）

USZ drag reducer (dispersant) can adjust the electric charge on the surfaces of cement particles to get proper cement rheology. As a result, it can reduce pump pressure, enhance drilling efficiency and used in construction easily.

CHARACTERISTICS

- USZ is modified polymer which made up of methanal and acetone.
- The normal dosage is: 0.3%～0.8% USZ (BWOC), and it is not confined to this range in some particular case.
- Dissolve easily
- Increasing additive dosage, it can adjust the rheology of the cement slurry effectively, and reduce the consistency;
- With good high temperature resistance, it can be used within 30℃～180℃ (BHCT).
- Consolidate cement stones, enhance its compression strength and control fluid loss.
- With certain retarding property.
- It can be mixed with or without water.
- Good compatibility with other additives.

TECHNICAL SPECIFICATION

• Appearance			Reddish-brown powder
• Rheological /85℃,0.1mPa,20min	Property	n	≥0.5
		K,Pa.s	≤0.7
• Initial consistency, Bc/85℃,70.3mPa,44min			≤20
• Thickening time ratio/85℃,70.3mPa,44min			1.0-2.0
• Compression strength ratio/110℃,21mPa,24h			≥0.8

The ingredient of the cement slurry in the table is: G class cement, W/C 0.44, USZ: 0.5%(BWOC), water quality: distilled water.

PACKAGING AND STORAGE

- USZ sacked with three-layer plastics bag, 25kg per bag.
- Be kept away from moisture and possible damage of the packages in transportation, and stored in cool and dry situation.
- Storage life time is two years.

6. Defoamer

XP-1 Defoamer for Oil Well Cement

XP-1 agent can de-foam through reducing surface tension of liquid.

CHARACTERISTICS

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- XP-1 belongs to macromolecule polyether compound.
- Density is 0.88g/cm^3, non-poisonous, non-odor, non-corrosive, and no environment pollution.
- Normal dosage: 0.1%～0.3% (BWOC).
- It has various functions such as inhibiting foam, de-foaming, and preventing migration of gas, which can de-foam rapidly.
- Resist corrosion of acid and base, as well as high temperature.
- Has good compatibility with other additives.
- Has no harmful influence on other properties of cement slurry.

TECHNICAL SPECIFICATUONS

• Appearance	colorless or yellowish viscous liquid
• Recovery rate of cement slurry	≥90.0

PACKAGING AND STORAGE

- Stored in 25L plastic drums, 20kg/drum.
- Kept away from fire, damage and leakage in store and transportation.
- Storage life time is one year.

XP-3 Defoamer for Oil Well Cement

XP-3 can defoam through reducing surface tension of liquid.

CHARACTERISTICS

- XP-3 belongs to macromolecule polyether compound.
- Density is 1.45g/cm^3, non-poisonous, non-odor, non-corrosive, and no environment pollution.
- Normal dosage: 0.3%～0.5% (BWOC).
- It has various functions such as inhibiting foam, defoaming, preventing migration of gas, defoaming rapidly
- Resist corrosion of acid and base, as well as high temperature.
- Has good compatibility with other additives.
- Has no harmful influence on other properties of cement slurry.

TECHNICAL SPECIFICATUONS

• Appearance	White powder
• Fineness (0.425mm mesh),%	≤7.0
• Cement slurry density, g/cm^3	≥1.86

PACKAGING AND STORAGE

- Be sacked with three-layer plastics bag, 25kg per bag.
- Kept away from fire, damage and leakage in store and transportation.

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- Storage life time is two years.

7. WH-1 Flushing Fluid

WH-1 is made of multiple high active surface active agents and others assistant agents.
WH-1 is primrose yellow or achromatic liquid, non-poisonous, non-odor, non-corrosive
WH-1 has a strong infiltration and infiltration of the drilling process can quickly formed in the wall of mud cake, mud cake will be spread out erosion, thereby to enhance the cement capacity between water slurry and the contacting surface.
WH-1 has a strong wash oil property, can effectively remove and replace well petroleum phase material, and turn a well's pro-oil interface to the hydrophilic interface, thereby enhancing the capacity of cement slurry.
WH-1 has good compatibility with oil-base mud.

PROPERTIES AND SPECIFICATION

- Appearance — Light yellow or colorless liquid
- pH — 6.0～9.0
- Ignition residue，% — ≤0.3
- Density，g/cm^3 — 1.00±0.05

The evaluation of flushing efficiency is tested with the used oil-based mud and temperature.

PACKAGING AND STORAGE

Stored in plastic barrels, 25kg/barrel, or packed according to the request of clients.
To be kept away from fire, damage and leakage in storage and transportation. Storage life time is one year.

WH-5 Oil-based Flushing fluid

WH-5 is composed by kinds of high effective surfactants, reverse wetting agent, organic solvents, thinner and other agents.
WH-5 has a strong function of infiltration and can rapidly infiltrates to the mud cakes that formed on the wall of the well during the process of the drilling, and then disperses and denudes the mud cakes, thus to enhancing the cement capacity of the slurry with the contact surface.
WH-5 has a good performance of oil flushing, and it can effectively remove and replace the oil-phase materials, changing the lipophilic interface to hydrophilic interface, thus to enhancing the

cement capacity of the cement slurry.
WH-5 has a good capability with oil-based slurry.

CHARACTERISTICS

Formulate WH-5 oil-based flushing fluid to 2％~50％aqueous solution for spare. The dosage of oil-based flushing fluid is based on the design of 300m annular height of each well, and also can in accordance with the real cementing.

- Appearance — Transparency liquid
- pH — 6.0~9.0
- Density, g/cm^3 — 1.00±0.1

Formula of flushing fluid

Name	Standard	Amount of admixture (g)	Proportion
Water	500℃hot water	600	100
Flushing fluid	WH-5	60	10

Consequence of flushing fluid

Item	Test conditions	Technology
Efficiency of flushing (10 min), ％	Out of the barrel pick up crude by Fan viscosimeter, Rotate seed 300r/min, Solution temperature≥ 38℃	≥60

The washing efficiency was measured by oil base mud and the temperature.

PROPERTIES AND SPECIFICATION

PACKAGING AND STORAGE

- Packaged in plastic barrels, 25kg/barrel, 50kg/barrel, 200kg/barrel.
- Be kept away from damaging of the packages in transportation.
- Period of validity is one year.

8. WH-2 Weighting and Spacer Agent

WH-2 is a spacer that made of some high active surface active agents, suspending agents, weighting agents, thinner and the others addition agents.
WH-2 is a free flow powder, non-poisonous, non-odor, and non-corrosive.
Suitable temperature: 25～150℃(BHCT).
WH-2 can combine and effectively mix different density dusting agents among 1.0～1.9g/cm^3; it also effects washing the wall of well effectively.

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WH-2 has a strong infiltration of the drilling process can quickly be formed in the wall of mud cake with mud cake singling out effectively erosion; thereby enhancing the water slurry and the contact surface of the cement capacity.

WH-2 has good compatibility with cement slurry, can dilute cement slurry effectively and improves the performance of cement.

PROPERTIES AND SPECIFICATION

• Appearance	free flow powder
• Initial consistency，Bc	≤30
• Thickening time，min/80℃,40Mpa,40min	≥60
• Density difference, g/cm^3	≤0.05
• Compression strength， Mpa/80 ℃， normal	≥7

The ingredients of the cement in the table are: JiaHua G class cement, pre-made dusting agent(4% aqueous solution): 5%(BWOC), W/C: 0.44, water quality: distilled-water

PACKAGING AND STORAGE

Sacked with three-layer plastics bag, 25kg per bag;

Be kept away from moisture and possible damage of the packages in transportation. Storage life time is two years.

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