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   b. Cement Grinding Aid
   c. Water-repellent & Water-proofing Agent
   d. Shrinkage Control Admixture
   e. Mold Release agent
   f. curing compound
   g. Concrete Surface Hardner
## Construction Chemical

### Product list

<table>
<thead>
<tr>
<th>Category</th>
<th>Product Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Polycarboxylate</td>
<td>AP-50</td>
<td>High range Water Reducer Type A</td>
</tr>
<tr>
<td></td>
<td>AP-50B</td>
<td>High range Water Reducer Type B</td>
</tr>
<tr>
<td></td>
<td>APR-50</td>
<td>Slump Type Water Reducer</td>
</tr>
<tr>
<td></td>
<td>KP-50</td>
<td>Slump Retention Type A</td>
</tr>
<tr>
<td></td>
<td>KP-501</td>
<td>Slump Retention Type B</td>
</tr>
<tr>
<td></td>
<td>HP45</td>
<td>Early strength</td>
</tr>
<tr>
<td>Air-Entrainer</td>
<td>AE-100</td>
<td>Air entraining agent for Local concrete Market</td>
</tr>
<tr>
<td></td>
<td>AE-300</td>
<td>AE-300 shows better performance in stability than AE-100 Especially in low temperature.</td>
</tr>
<tr>
<td>Deformer</td>
<td>KDF-1</td>
<td>DF-1 is a deforming agent. It decrease entrapped air content in concrete during mixing.</td>
</tr>
<tr>
<td>Cement Grinding Aid</td>
<td>CQA-100</td>
<td>To enhance the output and lower power consumption in clinker grinding process</td>
</tr>
<tr>
<td></td>
<td>CQA-200</td>
<td>For raw materials such as limestone, clay etc in cement plants. Designed for enhancing the output and lower power consumption in grinding process for raw materials.</td>
</tr>
<tr>
<td></td>
<td>CQA-300</td>
<td>For grinding cement clinker in cement mills.</td>
</tr>
<tr>
<td></td>
<td>SCA-30B</td>
<td>To reduce drying shrinkage of concrete and mortar and the potential for subsequent cracking.</td>
</tr>
<tr>
<td>Water-repellent &amp; Water-proofing Agent</td>
<td>WR&amp;P-100(org)</td>
<td>Oil nature type penetrating water repellent &amp; water proofing agent</td>
</tr>
<tr>
<td></td>
<td>WR&amp;P-505</td>
<td>Water base penetrating water repellent &amp; water proofing agent</td>
</tr>
<tr>
<td>Concrete Mould Release Agent</td>
<td>MS-1</td>
<td>Water based emulsion solution</td>
</tr>
<tr>
<td>Curing Compound</td>
<td>J-cure 20</td>
<td>To retain moisture in concrete for effective curing.</td>
</tr>
<tr>
<td>Concrete surface hardner</td>
<td>SX-30</td>
<td>designed for industrial floors and provides long-term Savings and improved plant efficiency</td>
</tr>
<tr>
<td>Grout for Semi-rigid Asphalt-Cement Composite</td>
<td>WF-HPC100</td>
<td>WF-HPC100 is a high flowing grout that is used for road paving with porous Asphalt concrete. After 7 days from placing, it gains a compressive strength of 21MPa.</td>
</tr>
<tr>
<td></td>
<td>WF-HPC200</td>
<td>WF-HPC200 is a high flowing grout that is used for road paving with porous Asphalt concrete. After 3 hours from placing, it gains a compressive strength of 7.0MPa. So, it is normally used for the repair works and in urgent case.</td>
</tr>
<tr>
<td></td>
<td>WF-HPC300</td>
<td>WF-HPC300 is a high flowing grout that is used for road paving with porous Asphalt concrete. After 3 hours from placing, it gains a compressive strength of 21MPa. It is possible to substitute WF-HPC300 for concrete paving on bridges.</td>
</tr>
<tr>
<td>Additives for Shotcrete</td>
<td>WF-NT</td>
<td>WF-NT is a powdered accelerator for shotcrete. The dosage of normal use is 5% to 10% of weight of cement.</td>
</tr>
<tr>
<td></td>
<td>WF-NTE</td>
<td>WF-NTE give shotcrete the high strength at the early stage. As use of 10% of weight of cement, it is possible to get 3MPa, compressive strength, of shotcrete at 1 hour of placing.</td>
</tr>
<tr>
<td>Accelerating Agent</td>
<td>WF-5000</td>
<td>WF-5000 is a accelerator with the ettringite system for cement, mortar and concrete that gets hardening time faster than normal one. It is normally used by 3% to 10% by cement weight.</td>
</tr>
<tr>
<td>Admixture</td>
<td>WF2000</td>
<td>WF2000 is a superplasticizer that is effective for steam curing concrete and PHC Pile. A concrete with WF2000 can get higher strength than a normal concrete at the early age.</td>
</tr>
<tr>
<td>Very-early Strength Cement</td>
<td>VESCON</td>
<td>VESCON is a quick hardening cement mixture for concrete that is used for urgent working place or indoor. It gains a compressive strength of 20 to 40 MPa after 3 hours of placing in concrete.</td>
</tr>
<tr>
<td>Special Cement</td>
<td>CERART</td>
<td>CERART is a blended special cement compound that is used to make a mold and statue. It is a light weight, high strength at the early age and non-shrinkage property.</td>
</tr>
<tr>
<td>Accelerator</td>
<td>QuickTar</td>
<td>QuickTar is a accelerator that is used for earth anchor works. It gains a high strength of 21MPa at 24 hours after placing. It is usual to mix 80%of premixed mortar and 20% of QuickTar in field.</td>
</tr>
<tr>
<td>Grout Material</td>
<td>ECG</td>
<td>ECG is an eco-friendly soilgrout for soil grouting works. It is consist of 3 components. One is cement, another is ECG1000 of co-polymer, and the third is ECG2000 of calcium aluminate compound.</td>
</tr>
<tr>
<td>CSA Cement</td>
<td>HD-PM</td>
<td>HD-PM is a CSA cement for high strength and early strength mortar and concrete. It can also be used as an ingredient for cement accelerator admixture.</td>
</tr>
<tr>
<td>Expansive</td>
<td>HD-EX</td>
<td>HD-EX is a very stable, effective expansion agent in cement product. Typically used in non-shrinkage mortar and concrete. Also used to induce chemical pre-stress in concrete products.</td>
</tr>
</tbody>
</table>
About JNT

JNT is market’s leading construction chemical company and produce an extensive range of specialized construction chemicals. Through wealth of field experience, technical knowledge and innovation, we enable our customers in the construction industries to meet the current and future needs.

JNT’s R&D

JNT’s R&D has developed partnership with various university and public research institutes and close to the field and customers. With state of art equipment and continuous investment of new technologies, we have new generation product of polymers and formulated products. To meet rapidly changing market trend and products needs of customers, JNT has been focusing on field and develop new products.

Key History

2006  creation of JNT
2006 – 2009  Produce special cement & PC admixture
2010  Established Kim-JE fine chemical plant
2012  Hit billion dollar exporting award.

Business Area

› Construction and building
› Construction and Fine Chemicals
› Consulting for cement industries
## Polycarboxylate Copolymer

<table>
<thead>
<tr>
<th>ITEM</th>
<th>AP-50</th>
<th>AP-50B</th>
<th>APR-50</th>
<th>KP-50</th>
<th>KP-501</th>
<th>HP-45</th>
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<tbody>
<tr>
<td><strong>Product</strong></td>
<td>Water Reducer</td>
<td>Water Reducer</td>
<td>Slump Type</td>
<td>Slump Retention</td>
<td>Slump Retention</td>
<td>Early strength</td>
</tr>
<tr>
<td><strong>Type</strong></td>
<td>Type A</td>
<td>Type B</td>
<td>Water Reducer</td>
<td>Type A</td>
<td>Type B</td>
<td></td>
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<tr>
<td><strong>Appearance</strong></td>
<td>Brown Liquid</td>
<td>Brown Liquid</td>
<td>Light Yellow Liquid</td>
<td>Brown Liquid</td>
<td>Brown Liquid</td>
<td>Brown Liquid</td>
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<tr>
<td><strong>Solid Content %</strong></td>
<td>50±1</td>
<td>50±1</td>
<td>50±1</td>
<td>50±1</td>
<td>50±1</td>
<td>45±1</td>
</tr>
<tr>
<td><strong>pH value</strong></td>
<td>4±2</td>
<td>4±2</td>
<td>4±2</td>
<td>4±2</td>
<td>4±2</td>
<td>4±2</td>
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<tr>
<td><strong>Viscosity (cps)</strong></td>
<td>1,000 Max.</td>
<td>1,000 Max.</td>
<td>1,000 Max.</td>
<td>1,000 Max.</td>
<td>1,000 Max.</td>
<td>1,000 Max.</td>
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<tr>
<td><strong>Specific Gravity</strong></td>
<td>1.10±0.04</td>
<td>1.10±0.04</td>
<td>1.10±0.04</td>
<td>1.10±0.04</td>
<td>1.10±0.04</td>
<td>1.10±0.04</td>
</tr>
<tr>
<td><strong>Dosage % (20% base)</strong></td>
<td>0.06 ~ 2.0</td>
<td>0.06 ~ 2.0</td>
<td>0.06 ~ 2.0</td>
<td>0.06 ~ 2.0</td>
<td>0.06 ~ 2.0</td>
<td>0.06 ~ 2.0</td>
</tr>
<tr>
<td><strong>Packing</strong></td>
<td>* 230Kg Drum (80EA)</td>
<td>*1.1 IBC Tank (18EA)</td>
<td>*21MT Flexi Tank (1EA)</td>
<td></td>
<td></td>
<td></td>
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</tbody>
</table>
EXFLOW® AP50
(High Range Water Reducing Agent)
New generation Polycarboxylic ether
congestion for high performance concrete

PRODUCT DESCRIPTION

- EXFLOW AP50 is polycarboxylate polymer based superplasticizer which has excellent water reduction ability and designed for self-compacting concrete and a good flow ability.
- Free from chlorides and complies with ASTM C494 Type A and G.
- Compatible with all Portland cements and pozzolanic that meet recognized international standards.

ADVANTAGES

- Excellent water reduction ability with a good fluidity.
- Self-compacting concrete
- Higher compressive strength with low W/C
- Improvement of durability of the concrete
- Available for pre-cast concrete

APPLICATION

The excellent dispersion properties of EXFLOW® AP50 makes it the ideal admixture for precast and ready-mixed concrete where low water cement ratios are required.
This property allows the production of very high ultimate strength concrete with minimal voids.
- High workability without segregation or bleeding
- Less vibration required
- Can be placed and compacted in congested reinforcement
- Reduced labor requirement
- Improved surface finish

DOSAGE

The normal dosage rate (20wt% of solid content base) is between 0.5 and 1.6 liters per 100kg of cement (cementitious material) depending on specific mix design and requirement.
In case of special job conditions, dosage may be consulted by JNT Technical Service Team.
EXFLOW AP50 is a polycarboxylate polymer-based superplasticizer with excellent water reduction ability and designed for self-compacting concrete and a good flowability. It is free from chlorides and complies with ASTM C494 Type A and G. It is compatible with all Portland cements and Pozzolans that meet recognized international standards.

High workability without segregation or bleeding
Less vibration required
Can be placed and compacted in congested reinforcement
Reduced labor requirement
Improved surface finish

The excellent dispersion properties of EXFLOW® AP50 make it the ideal admixture for precast and ready-mixed concrete where low water cement ratios are required. This property allows the production of very high ultimate strength concrete with minimal voids.

EXFLOW® AP50 contains no hazardous substances, however, if it is contacted on skin or clothes need to be washed with enough flowing water.

Do not use with naphthalene-based admixtures.

<table>
<thead>
<tr>
<th>Mix Design</th>
<th>W/C</th>
<th>S/A</th>
<th>Unit weight of material (kg/m³)</th>
<th>Remark</th>
</tr>
</thead>
<tbody>
<tr>
<td>25-35-500</td>
<td>44.1</td>
<td>42.0</td>
<td>W 185, OPC 420, S 700, G 994, AD(%) 0.7</td>
<td>Sol. 20% / Deformer 0.2%</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>ITEM</th>
<th>Slump / Flow (mm)</th>
<th>Compressive Strength (Mpa)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0 Min</td>
<td>30 Min</td>
</tr>
<tr>
<td>AP-50</td>
<td>610</td>
<td>570</td>
</tr>
</tbody>
</table>

**PERFORMANCE DATA**

**SHELF LIFE & PRECAUTIONS**

By 12 month, if stored according to manufacturer’s instructions. EXFLOW® AP50 contains no hazardous substances however if it is contacted on skin or clothes need to be washed with enough flowing water.

Do not use with naphthalene based admixtures.
EXFLOW® AP50B

(High Range Water Reducing Agent)

New generation Polycarboxylic ether concentration for high performance concrete

PRODUCT DESCRIPTION

- EXFLOW AP50B is polycarboxylate polymer based superplasticizer which has excellent water reduction ability and designed for self-compacting concrete and a good flow ability.
- Free from chlorides and complies with ASTM C494 Type A and G
- Compatible with all Portland cements and pozzolanics that meet recognized international standards.

ADVANTAGES

- Excellent water reduction ability with a good fluidity.
- Self-compacting concrete
- Higher compressive strength with low W/C
- Improvement of durability of the concrete
- Available for pre-cast concrete

APPLICATION

The excellent dispersion properties of EXFLOW® AP50B makes it the ideal admixture for precast and ready-mixed concrete where low water cement ratios are required. This property allows the production of very high ultimate strength concrete with minimal voids.

- High workability without segregation or bleeding
- Less vibration required
- Can be placed and compacted in congested reinforcement
- Reduced labor requirement
- Improved surface finish

DOSAGE

The normal dosage rate (20wt% of solid content base) is between 0.5 and 1.6 liters per 100kg of cement (cementitious material) depending on specific mix design and requirement. In case of special job conditions, dosage may be consulted by JNT Technical Service Team.
**PERFORMANCE DATA**

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<tr>
<th>Mix Design</th>
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<tr>
<td>25-35-500</td>
<td>44.1</td>
<td>42.0</td>
<td>W</td>
<td>OPC</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>185</td>
<td>420</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>ITEM</th>
<th>Slump / Flow (mm)</th>
<th>Compressive Strength (Mpa)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0 Min</td>
<td>30 Min</td>
</tr>
<tr>
<td>AP-50B</td>
<td>620</td>
<td>590</td>
</tr>
</tbody>
</table>

**SHELF LIFE & PRECAUTIONS**

By 12month, if stored according to manufacturer’s instructions.

EXFLOW® AP50B contains no hazardous substances however if it is contacted on skin or clothes need to be washed with enough flowing water.

Do not use with naphthalene based admixtures
EXFLOW®
APR50
(Slump type Water Reducer)
Excellent retention performance and powerful dispersing effect

PRODUCT DESCRIPTION

- EXFLOW APR-50 is polycarboxylate polymer based superplasticizer which designed for slump type concrete
- EXFLOW APR-50 has excellent retention performance with a good water reducing ability.
- Free from chlorides and complies with ASTM C494 Type A and G.
- Compatible with all Portland cements and pozzolanics that meet recognized international standards

ADVANTAGES

- Maintain the flow-ability of the concrete for a long time.
- High slump & excellent slump retention
- Make it possible for long transportation
- Reduction of labor and energy costs by high workability of concrete
- Improvement of durability of the concrete

APPLICATION

- EXFLOW APS-50 is designed for high strength concrete having low W/C ratio
- High workability without segregation or bleeding
- High performance concrete

DOSAGE

The normal dosage rate (20wt% of solid content base) is between 0.5 and 1.6 liters per 100kg of cement (cementitious material) depending on specific mix design and requirement.
In case of special job conditions, dosage may be consulted by JNT Technical Service Team for advice.
EXFLOW APR-50 is a polycarboxylate polymer-based superplasticizer designed for slump type concrete. It has excellent retention performance with good water-reducing ability. It is free from chlorides and complies with ASTM C494 Type A and G. It is compatible with all Portland cements and pozzolans that meet recognized international standards.

EXFLOW APS-50 is designed for high-strength concrete having low W/C ratio, ensuring high workability without segregation or bleeding, high-performance concrete, and maintaining the low-ability of the concrete for a long time. It offers high slump and excellent slump retention, making it possible for long transportation. It reduces labor and energy costs by improving the high workability of concrete and enhances the durability of the concrete.

**PRODUCT DESCRIPTION**

**ADVANTAGES**

**APPLICATION**

The normal dosage rate (20 wt% of solid content base) is between 0.5 and 1.6 liters per 100 kg of cement (cementitious material) depending on specific mix design and requirement. In case of special job conditions, dosage may be consulted by JNT Technical Service Team for advice.

**DOSAGE**

By 12 months, if stored according to manufacturer’s instructions.

EXFLOW® APR50 contains no hazardous substances; however, if it is contacted on skin or clothes, it needs to be washed with enough flowing water. Do not use with naphthalene-based admixtures.

**SHELF LIFE & PRECAUTIONS**

By 12 months, if stored according to manufacturer’s instructions.

EXFLOW® APR50 contains no hazardous substances, however, if it is contacted on skin or clothes, it needs to be washed with enough flowing water. Do not use with naphthalene-based admixtures.

**PERFORMANCE DATA**

<table>
<thead>
<tr>
<th>Mix Design</th>
<th>W/C</th>
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<td>W 185 S 420 G 700 AD(%) 994</td>
<td>0.7</td>
</tr>
</tbody>
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<table>
<thead>
<tr>
<th>ITEM</th>
<th>Slump / Flow (mm)</th>
<th>Compressive Strength (Mpa)</th>
</tr>
</thead>
<tbody>
<tr>
<td>APR-50</td>
<td>530 520 480 440</td>
<td>21.8 34.5 53.8</td>
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</tbody>
</table>

**FLOW**

![Flow Graph](chart)

**STRENGTH**

![Strength Graph](chart)
A raw material for superplasticizers of a new generation based on modified polycarboxylic ether polymers with super retention technology.

- The excellent dispersion effect makes EXFLOW® KP50 the ideal raw material for admixtures for ready mix concrete industry, when superior performance is required, even under severe conditions.
- Combines exceptional long slump life with normal setting times.
- Does not contain added chloride and conforms to chloride ion limits required by concrete industry standards.
- Compatible with all Portland cements and pozzolanics that meet recognized international standards.

**ADVANTAGES**

- Maintain the flow-ability of the concrete for a long time.
- Improvement of durability of the concrete
- Make it possible for long transportation
- Improvement of durability of the concrete
- Reduction of labor and energy costs by high workability of concrete

**APPLICATION**

The extended slump life of EXFLOW® KP50, concrete is ideally suited to pre-mix concrete. It allows plant dosing to occur with little or no slump loss between dosing and placement (travel time). As no extended retardation accompanies this extended work life, normal finishing times are experienced on site.

- To long distance transportation
- To keep slump retention under hot weather
- High workability without segregation or bleeding
- Improved surface finish
**DOSAGE**

It depends on the mix design, the ambient conditions and the degree of water reduction and workability required. The normal dosage rate (20wt% of solid content base) is between 0.5 and 1.6 liters per 100 kg of cement (cementitious material) depending on specific mix design and requirement. In case of special job conditions, dosage may be consulted by JNT Technical Service Team for advice.

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<td></td>
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</thead>
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<td></td>
<td>0 Min</td>
</tr>
<tr>
<td>KP50</td>
<td>510</td>
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</tbody>
</table>

**FLOW**

**SHELF LIFE & PRECAUTIONS**

By 12month, if stored according to manufacturer’s instructions.

- **EXFLOW® KP50** contains no hazardous substances however if it is contacted on skin or clothes need to be washed with enough flowing water.
- Do not use with naphthalene based admixtures.
EXFLOW®
KP501

(Slump Retention)
New generation Polycarboxylic ether concentration for high performance concrete

PRODUCT DESCRIPTION

- A raw material for superplasticizers of a new generation based on modified polycarboxylic ether polymers with super retention technology.
- The excellent dispersion effect makes EXFLOW® KP501 the ideal raw material for admixtures for ready mix concrete industry, when superior performance is required, even under severe conditions.
- Combines exceptional long slump life with normal setting times.
- Does not contain added chloride and conforms to chloride ion limits required by concrete industry standards.
- Compatible with all Portland cements and pozzolanics that meet recognized international standards.

ADVANTAGES

- Maintain the flow-ability of the concrete for a long time.
- Improvement of durability of the concrete
- Make it possible for long transportation
- Improvement of durability of the concrete
- Reduction of labor and energy costs by high workability of concrete

APPLICATION

The extended slump life of EXFLOW® KP501, concrete is ideally suited to pre-mix concrete. It allows plant dosing to occur with little or no slump loss between dosing and placement (travel time). As no extended retardation accompanies this extended work life, normal finishing times are experienced on site.

- To long distance transportation
- To keep slump retention under hot weather
- High workability without segregation or bleeding
- Improved surface finish
**DOSAGE**

It depends on the mix design, the ambient conditions and the degree of water reduction and workability required. The normal dosage rate (20wt% of solid content base) is between 0.5 and 1.6 liters per 100 kg of cement (cementitious material) depending on specific mix design and requirement. In case of special job conditions, dosage may be consulted by JNT Technical Service Team for advice.

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**ITEM**

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<tr>
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<tbody>
<tr>
<td></td>
<td>0 Min</td>
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<tr>
<td>KP-501</td>
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</table>

**FLOW**

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<th></th>
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<th>600</th>
<th>400</th>
<th>200</th>
<th>0</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 min</td>
<td>30 min</td>
<td>60 min</td>
<td>90 min</td>
<td>120 min</td>
<td>150 min</td>
</tr>
</tbody>
</table>

**SHELF LIFE & PRECAUTIONS**

By 12month, if stored according to manufacturer’s instructions.

- **EXFLOW® KP501** contains no hazardous substances however if it is contacted on skin or clothes need to be washed with enough flowing water.
- Do not use with naphthalene based admixtures
EXFLOW® HP45
(High early strength type superplasticizer)

PRODUCT DESCRIPTION

EXFLOW ® HP45 series is high early strength type superplasticizer for making concretes for with high dispersion and early strength through introducing diverse changes of molecular weight to the side-chain of carboxylate polymers. Especially, it has the advantages to accelerate early strength required on site without relying on seasonal influences such as the rainy season or wintertime, and it can shorten work process and reduce construction expenses.

ADVANTAGES

- Improve the dispersion and accelerate early strength of concrete.
- Reduce slump loss and bleeding.
- Increased durability of the concrete
- Able to make high strength concrete through reducing water use.
- Accelerated setting characteristics

APPLICATION

- Precast concrete and pre-stress concrete
- High early strength applications.
- SOC structures including LNG bases, highways, railways, subway construction and tunnels.
- Concrete with high contents of fly ash, blast furnace slag or silica fume.

DOSAGE

The normal dosage rate (20wt% of solid content base) is between 0.5 and 1.6 liters per 100kg of cement (cementitious material) depending on specific mix design and requirement. In case of special job conditions, dosage may be consulted by JNT Technical Service Team for advice.

SHELF LIFE & PRECAUTIONS

By 12month, if stored according to manufacturer’s instructions.

- EXFLOW® HP45 contains no hazardous substances however if it is contacted on skin or clothes need to be washed with enough flowing water.
- Do not use with naphthalene based admixtures
Cement Grading Aid

In order to optimize cement or raw materials production at different stages of the manufacturing process, JNT provides a full range of grinding aids for both clinker and raw meal grinding.

Main Purpose of CQA

- Increase grinding process productivity
- Reduce production costs
- Improve cement quality
- Improve cement storage and transportation

ADVANTAGES

CQA-100 : High Efficiency Grinding Aid and Pack Set Inhibitor
CQA-300 : Early & Long term Strength Enhancing Additive

SPECIAL PRODUCT RANGE

We produce and develop tailor-made products according to the needs of customers request.
CQA-100
High Efficiency Grinding Aid and Pack Set Inhibitor

PRODUCTION DESCRIPTION

CQA-100 is advanced grinding aid different from conventional amine or glycol based grinding aids. CQA-100 improves mill efficiency by 10% ~ 20% in OPC production.

PRODUCT ADVANTAGE

- Reduce energy consumption
- Improve productivity with same fineness
- Enhance strength
- Improve cement fluidity
- Less dosage than conventional grinding aid

DOSAGE

The recommended dosage is 0.02~0.05 wt%. The specific dosage for a mill is affected by properties of clinker and other raw materials, and machinery equipment and technical parameters of the mill. The optimum dosage should be determined through laboratory and mill tests.

<table>
<thead>
<tr>
<th>Dosage (%)</th>
<th>Clinker (MT/hr)</th>
<th>CQA-100 (Liter/hr)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.04</td>
<td>100</td>
<td>40,000</td>
</tr>
<tr>
<td>0.04</td>
<td>200</td>
<td>80,000</td>
</tr>
<tr>
<td>0.05</td>
<td>100</td>
<td>50,000</td>
</tr>
<tr>
<td>0.06</td>
<td>300</td>
<td>60,000</td>
</tr>
</tbody>
</table>
CQA-300
Quality/ Early Strength Enhancing Additive

**PRODUCTION DESCRIPTION**

CQA-series are organic chemical cement grinding aids to optimize particle size and prevent re-agglomeration. It is eliminating the materials which interrupts the cement hydration. Thus CQA improves productivity and increases strength of the cement.

**PRODUCT ADVANTAGE**

- Enhance early strength. / Better strength than Plain / Improve cement fluidity
- less dosage than conventional grinding aid / Reduce energy consumption

**DOSAGE**

The recommended dosage of CQA-300 is 0.01~0.05wt% against clinker. The specific dosage for a mill is affected by properties of clinker and additions, and machinery equipment and technical parameters of the mill. It should be determined through laboratory and mill trials. Incase of special job conditions, dosage may be consulted by JNT Technical Service Team for advice.
Comparing Blank (Plain) with CQA added, there is improvement of strength when using CQA-100, and CQA-300 shows the best early strength in the result.

### Blaine Value; cm²/g

<table>
<thead>
<tr>
<th>ITEMS</th>
<th>Residue (%)</th>
<th>90 Min Blaine</th>
<th>120 Min Blaine</th>
<th>Final grinding (3350±150 cm²/g) Time (min,sec”)</th>
<th>Blaine</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blank</td>
<td>8.50%</td>
<td>2,250</td>
<td>2,745</td>
<td>34’52”</td>
<td>3,250</td>
</tr>
<tr>
<td>CQA-100</td>
<td>6.40%</td>
<td>2,720</td>
<td>3,380</td>
<td>30’00”</td>
<td>3,380</td>
</tr>
<tr>
<td>CQA-200</td>
<td>7.00%</td>
<td>2,545</td>
<td>3,325</td>
<td>30’00”</td>
<td>3,325</td>
</tr>
<tr>
<td>CQA-300</td>
<td>6.20%</td>
<td>2,685</td>
<td>3,375</td>
<td>30’00”</td>
<td>3,375</td>
</tr>
</tbody>
</table>

### Physical property of cement (Mortar Test - KS L ISO 679)

<table>
<thead>
<tr>
<th>No</th>
<th>W/C (%)</th>
<th>Flow (mm)</th>
<th>Comp. Strength (MPa)</th>
<th>1 day</th>
<th>%</th>
<th>3 day</th>
<th>%</th>
<th>7 day</th>
<th>%</th>
<th>28 day</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blank</td>
<td>50</td>
<td>165</td>
<td></td>
<td>10.9</td>
<td>100%</td>
<td>21.5</td>
<td>100%</td>
<td>30.2</td>
<td>100%</td>
<td>45.9</td>
<td>100%</td>
</tr>
<tr>
<td>CQA-100</td>
<td>50</td>
<td>185</td>
<td></td>
<td>12.5</td>
<td>115%</td>
<td>22.8</td>
<td>106%</td>
<td>32.6</td>
<td>108%</td>
<td>49.2</td>
<td>107%</td>
</tr>
<tr>
<td>CQA-300</td>
<td>50</td>
<td>180</td>
<td></td>
<td>13.2</td>
<td>121%</td>
<td>23.8</td>
<td>111%</td>
<td>34.1</td>
<td>113%</td>
<td>50.5</td>
<td>110%</td>
</tr>
</tbody>
</table>

### CQA-Series Strength of ground cement

Comparing Blank (Plain) with CQA added, there is improvement of strength when using CQA-100, and CQA-300 shows the best early strength in the result.
Comparing Blank (Plain) with CQA added, there is improvement of strength when using CQA-100, and CQA-300 shows the best early strength in the result.

<table>
<thead>
<tr>
<th>PRODUCT DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>WR&amp;P-50(S) which is water-based organic-inorganic hybrid sol is water-repellent &amp; water-proofing agent to the surface of cement &amp; concrete application. WR&amp;P-50(S) can adjust its particle size and has an excellent dispersant performance.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>DOSAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Excellent moisture-proofing, water-proofing, water-repellent</td>
</tr>
<tr>
<td>Eco-friendly, No harmful to the human body</td>
</tr>
<tr>
<td>By formation of thin coating (functional nano particle) on the surface and inside of concrete, it can reinforce physical properties of concrete</td>
</tr>
<tr>
<td>WR&amp;P-50(S) is functional material for coating formulation.</td>
</tr>
<tr>
<td>High durability: Acid-resistance, Alkali-resistance, Salt-damage resistance, neutralization resistance for a long time.</td>
</tr>
<tr>
<td>Control of whitening even on the surface of concrete</td>
</tr>
<tr>
<td>Regardless of the size of concrete pore, it can be applied construction and maintenance</td>
</tr>
<tr>
<td>No effect on the color of structures</td>
</tr>
<tr>
<td>After installation, plastering and painting jobs are available</td>
</tr>
</tbody>
</table>
WR&P-50(s)
High Performance Water-repellent & Water-proofing Agent

APPLICATION

- Water-repellent surface treatment on the new concrete Structure
- Water proofing and water repellent treatment on the surface of products of Hume Concrete, brick, concrete board, gypsum board
- Reservoir of water purification plants, water and sewage-related facilities
- Neutralization or chemical erosion is concerned, and difficult to maintained basement walls and slab structures, industrial plant facilities
- Slopes, roads and runways
- Construction of water repellent and water proofing to the bridge deck and piers of the bridge is possible

FUNCTIONAL MECHANISM

- Apply WR&P-50(S) of Si-O hybrid sol to surface of concrete

- When Si-O hybrid sol contact concrete, linear Polymer chain is formed

- Through the hardening process of linear Polymer chain, it makes cross-linking and by forming network polymer with concrete structure it makes perfect Water repellent and water proofing effect
**SPECIFICATIONS**

<table>
<thead>
<tr>
<th>Items</th>
<th>Spec</th>
<th>Remark</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance</td>
<td>Milky White</td>
<td>By eye</td>
</tr>
<tr>
<td>Solid content (%)</td>
<td>50±1%</td>
<td>Active Material</td>
</tr>
<tr>
<td>pH</td>
<td>4 ~ 6</td>
<td>pH meter</td>
</tr>
<tr>
<td>Specific gravity (g/ml)</td>
<td>0.98±0.02</td>
<td>at. 25 °C</td>
</tr>
</tbody>
</table>

**GUIDELINES**

**Ready For Operation**
Clean up the surface of the concrete (In case of secondary products, after treatment of surface defects then apply it)

**Dosage**
Make its solid content to 3 – 7% sol and apply 300~400 ml/㎡ of WR&P-50(S) by spray, roller, airless machine, brush

**Curing Process**
After installment, make it dry completely by air dry (it is recommendable to 25 °C, 3~6hr)

**SHELF LIFE & PRECAUTIONS**

- Store it over 5.0 °C
- When it open, it is recommend to use in a shorten time of period.
- Guarantee: 6month

**PACKING**

- 18Liter Pail Drum / 180Liter Drum / 1.0 Ton IBC Tank
WR&P-100(Org)

High Performance Water-repellent & Water-proofing Agent

**PRODUCTION DESCRIPTION**

WR&P-100(Org) is oily nature type penetrating Water repellent & Water proofing agent.. Good for water repellent & water proofing efficiencies and showing good penetrating when it is used for Mortal or concrete and safety against alkali. Strongly protecting the water penetration and protecting the abrasion from freezing or salts. This is no color, transparent products.

**ADVANTAGES**

- High penetration:
  Maximize the function of water repellent & water proofing by homogenous penetration into the concrete and cement.
- Long term persistent ability
- Stable against chemicals
- Convenience to use
- Easy to use and shortening the working time

**APPLICATION**

- Concrete, stone, Red bricks, tiles outside of the structure.
- Water repellents on the outside surface which has many pole holes like ALS, concrete blocks.
- Concrete pier and concrete structure
- If it is used by mixing 5:1 (Aqueous paint 5:Proseal 1) on the concrete outside wall, protect the decolorizing and showing good water repellent.
- If is used with the same way like above 4 on the basement wall, reducing of the forming of moss and deleting the bad small and good for anti bacteria and easy for cleaning of the wall.

**FUNCTIONAL MECHANISM**

**Step 1.**
Spraying or painting WR&P-100(org), Si-O hybrid sol on the concrete surface

**Step 2.**
Si-O hybrid sol is forming linear Polymer chain when it is contacted to concrete
GUIDELINES FOR USE

Step 1. Surface treatment
1) The concrete surface or structure are fully cured at 20DEG C for 28days.
2) Remove the dusts or impurities on the surface perfectly.
3) Use this products when it is completely dried after the treatment by alkali surface treatment agent and water if the surface is whitely coloured
4) When you are trying to use the surface which has big sized porous parts on the surface, please use this products after down sizing the holes on the surface.

Step 2. Way to spraying or painting
1) Spray or paint WR&P by roller, sprayers after treating the surface homogeneously.
2) Spraying or painting one time is enough, but spray or paint 2 times if the surface too much porous.
3) Please keep the sprayer pressure below 0.4kg/cm2 carefully control, the quantity of the water repellent not to be flowing.

Step 3. Caution
1) Do not use below 5 °C.
2) Be careful so that the solvent is not evaporated
3) Keep the products after close the cap tightly at 5~35 °C.
4) Use after fully agitating the products and paint.

SAFETY

- After fully understanding of the Material Safety Data Sheet (MSDS)
- Avoid contact to eye ad skin directly and do not drink.
- Use apron and rubber gloves and goggles.

STORAGE

- Keep this products at Emulsion status at 5~40 °C
- Use the products within 6months after once it is opened.

PACKAGING

- 18Liter Pail Drum
- 180Liter Drum
- 1.0 Ton IBC Tank
SCA-30B shrinkage reducing admixture was developed specifically to reduce drying shrinkage of concrete and mortar, and the potential for subsequent cracking.

SCA-30B admixture functions by reducing capillary tension of pore water, a primary cause of drying shrinkage.

The advanced effect of reducing drying shrinkage makes it possible to lower shrinkage cracks. Using SCA-30B is the best choice for high quality for cement mortar and concrete.

**USES**

- Wall and Slab concrete
- Underground structure concrete
- Repairing structure
- Secondary Tunnel Lining
- Paving concrete and Pre-cast Items

**ADVANTAGES**

- High performance for reducing drying shrinkage of cement mortar and concrete by advanced surfactant effect.
- Increasing effect for reducing drying shrinkage as well as increasing a dosage.
- Unchangeable shrinkage reducing effect mixing with general admixture for ready-mixed concrete.
- Liquid condition gives you easy and convenient use for mortar or concrete mixture as a part of unit amount, and makes it possible to control uniform qualities.
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SCA-30B admixture functions by reducing capillary tension of pore water, a primary cause of drying shrinkage.

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### Wall and Slab concrete
- Underground structure concrete
- Repairing structure
- Secondary Tunnel Lining
- Paving concrete and Pre-cast Items

### DESCRIPTION
**SCA-30B**

- **Shrinkage Control Admixture**
- High performance for reducing drying shrinkage of cement mortar and concrete by advanced surfactant effect.
- Increasing effect for reducing drying shrinkage as well as increasing a dosage.
- Unchangeable shrinkage reducing effect mixing with general admixture for ready-mixed concrete.

**Liquid condition** gives you easy and convenient use for mortar or concrete mixture as a part of unit amount, and makes it possible to control uniform qualities.

Knowledge of the shrinkage characteristics of the concrete mixture proposed for use is required prior to the addition of SCA-30B admixture.

The dosage of SCA-30B admixture will be dependent on the desired drying shrinkage and the reduction in drying shrinkage required. Therefore, it is strongly recommended that drying shrinkage testing be performed to determine the optimum dosage for each application and each set of materials.

The typical dosage range of SCA-30B admixture is 0.5 to 1.5 gal/yd³ (2.5 to 7.5 L/m³). However, dosages outside of this range may be required depending on the level of shrinkage reduction needed.

**Mixing:**

SCA-30B admixture may be added to the concrete mixture during the initial batch sequence or at the jobsite. The mix water content should be reduced to account for the quantity of SCA-30B admixture used. If the delayed addition method is used, mixing at high speed for 3-5 minutes after the addition of SCA-30B admixture will result in mixture uniformity.

SCA-30B admixture does not substantially affect slump. SCA-30B admixture may increase bleed time and bleed ratio (10% higher). SCA-30B admixture may also delay time of set by 1-2 hours depending upon dosage and temperature. Compressive strength loss is minimal with SCA-30B admixture.

All projects requiring SCA-30B admixture in concrete applications exposed to freezing and thawing environments must be pre-approved and require field trials prior to use. Therefore, contact your local sales representative when concrete treated with SCA-30B admixture is being proposed for applications exposed to freezing and thawing environments.

### GUIDELINES FOR USE

**Dosage:**

Knowledge of the shrinkage characteristics of the concrete mixture proposed for use is required prior to the addition of SCA-30B admixture.

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### STORAGE AND HANDLING

**Storage Temperature:**

SCA-30B admixture is a potentially combustible material with a flash point of 198 °F (92 °C). This is substantially above the upper limit of 140 °F (60 °C) for classification as a flammable material, and below the limit of 200 °F(93 °C) where DOT requirements would classify this as a combustible material. Nonetheless, this product must be treated with care and protected from excessive heat, open flame or sparks. For more information refer to the MSDS. SCA-30B admixture should be stored at ambient temperatures above 35 °F (2 °C), and precautions should be taken to protect the admixture from freezing. If SCA-30B admixture freezes, thaw and reconstitute by mild mechanical agitation. Do not use pressurized air for agitation.

**Shelf Life:**

SCA-30B admixture has a minimum shelf life of 12 months. Depending on storage conditions, the shelf life may be greater than stated. Please contact your local sales representative regarding suitability for use and dosage recommendations if the shelf life of SCA-30B admixture has been exceeded.

**Packaging**

SCA-30B admixture is available in 55 gal (208 L) drums and 268 gal (1014 L) totes.

**Related Documents**

**Material Safety Data Sheets:**

SCA-30B admixture.
Concrete Mould Release Agent

‘MS-1’

**PRODUCTION DESCRIPTION**

MS-1 is water based emulsion solution. Different with conventional type of mold release agent, MS-1 is designed environmentally friendly and minimized surface defects such as air hole and odor.

- Wall and Slab concrete
- Underground structure concrete
- Repairing structure
- Secondary Tunnel Lining
- Paving concrete and Pre-cast Items

**PRODUCTION ADVANTAGE**

- Easy to use and release and maintenance
- Less odor and minimized to the risk of human health
- Safe from fire
- Higher dilution rate
APPLICATION

Secondary product of concrete
Sewer boxes, box concrete, culverts, Hume concrete pile
Large precast – panels, beams

HOW TO USE

Step 1 : Dilute it water with ratio of 1:1 ~ 5:1
Step 2 : Clean up the mold
Step 3 : Apply it by spraying or brushing or rolling on the mold

SPECIFICATION

Color : milky white
Freeze point : below -4 ºC
Boiling point : 100 ºC approx.
Viscosity : 50~300cps
Solubility in water : fully miscible with water
PH : 7 ± 1
Flash point : not available

PACKING

18L CAN / 200L DRUM / 1000L IBC TANK

STORAGE

It is recommended to store in tightly closed packaging.
J-Cure 20 Clear

**HIGH EFFICIENCY CURING COMPOUND**

**Uses**
- As a spray applied membrane to retain moisture in concrete for effective curing.
- Suitable for all general concreting applications and of particular benefit for large area concrete surfaces such as airport runways, roads and bridgeworks.

**Advantages**
- Improved curing of concrete enhances cement hydration and provides a more durable concrete.
- Control of moisture loss improves surface quality, reducing permeability, producing a hard wearing, dust-free surface and mini-missing potential for surface cracking and shrinkage. Light reflective grades mini-miss solar temperature gain.
- Spray application reduces labor costs and eliminates the need for alternative curing systems.

**STANDARDS COMPLIANCE**

All grades of J-Cure 20 Clear give 90% or greater curing efficiency when tested to BS 7542 and comply with BS 8110 Part 1, clause 6.6.3(c), ASTM C309 and AASHTO M148. J-Cure 20 Clear aluminized complies with the Specification for Highway Works, clause 1027.

**DESCRIPTION**

J-Cure 20 Clear concrete curing compound is resin based and is supplied in various pigmented grades.

- Clear: Straw liquid drying to a clear film.
- Green: As clear grade but with green fugitive dye.
- White: White liquid drying to a white film.
- Aluminized: Silver liquid drying to a silver film.

When first applied to a fresh cementitious surface the product forms a continuous, non-penetrating coating. This coating dries to form a continuous film which provides a barrier to moisture loss ensuring more efficient cement hydration, improved durability and reduced shrinkage. The white and aluminized grades contain pigments based on titanium dioxide and aluminum flake respectively to meet specifications requiring such pigmentation for reduction of solar temperature gain.
**TECHNICAL SUPPORT**

JNT.INC provides a technical advisory service for on-site assistance and advice on admixture selection, evaluation trials and dispensing equipment. Technical data and guidance can be provided for admixtures and other products for use with fresh and hardened concrete.

**INSTRUCTIONS FOR USE**

**Application**

Pigmented grades should be stirred before use to ensure even dispersion of pigment. J-Cure 20 Clear should be spray applied to the surface of fresh concrete. Application should begin immediately the concrete is free from surface water. Do not apply if bleed water is forming or present on the concrete surface. The spray nozzle should be held approximately 450mm from the concrete surface and passed back and forth to ensure complete coverage. Pump pressure should be maintained to give an even, fine spray. After spraying, no further application of water or other material is necessary to ensure continued curing. The concrete surface should not be disturbed until it has sufficient strength to bear surface loads. The applied film should not be walked on before it is fully dry and care should be taken to ensure that the film is not broken. J-Cure 20 Clear maul also be applied to the surface or newly hardened concrete immediately after de-molding. In such case the concrete surface should be sprayed with water to saturate it prior to the application of J-Cure 20 Clear. Dry surfaces may prevent correct film formation and cause absorption of the J-Cure 20 Clear which may lead to staining and difficulty in later removal.

**Coverage rate**

The recommended coverage rate is between 3.5 and 5.0m2/liter(0.200 to 0.285 liter/m2). Coverage rates outside this recommended range may be used if necessary and suitable to meet specific requirements. Contact local JNT.INC office or representative for advice in such cases.

**EQUIPMENT**

Spray equipment producing a fine mist may be used for J-Cure 20 Clear, such as knapsack or motorized sprayers. The suitability of equipment should be ensured by an application trial.

**Equipment cleaning**

Spray equipment should be cleaned immediately after use by flushing through with Solvent 103.

**Overcoating and removal**

J-Cure 20 Clear must be removed from a concrete surface before application of a subsequent coating to ensure a good bond of the over coated material to the concrete. J-Cure 20 Clear will be slowly removed by physical abrasion in normal trafficking and exposure. To ensure complete removal use high pressure water jet or light sand blasting. Non-pigmented grades of J-Cure 20 Clear will also be slowly broken down by exposure to UV light.
Estimating-packaging
J-Cure 20 Clear is available in drum supply. Details of specific packaging volumes are available on request.

UN packaging regulations
All products classified as ‘hazardous’ which are to be exported overseas, must conform to the current UN regulations for packaging and documentation.
Standard packaging for KOR requirements may not conform to KOR regulations.
JNT.INC can supply the correct export packaging and with the required documentation for surface transport. Where JNT.INC are requested to deliver within the KOR and the Purchaser intends to ship onwards, it is incumbent upon the Purchaser to specify that UN packaging and documentation is required at the time of quotation and placing of an order. Otherwise, once materials are received, the responsibility rests solely with the Purchaser. The use of UN packaging may affect the selling price of products.
Refer to the local JNT.INC office or representative.

Storage
J-Cure 20 Clear has a minimum shelf life of 12 months, 6 months for pigmented grades, when stored in the original unopened containers under normal warehouse conditions.

PRECAUTIONS

Health and safety
J-Cure 20 Clear should not be swallowed or allowed to come into contact with skin and eyes. Avoid inhalation of vapors and ensure adequate ventilation. Suitable protective gloves and goggles should be worn. Some people are sensitive to resins and solvents. Barrier creams such as Kerodex Anti-solvent or Rozalex Anti-paint provide additional skin protection. Should accidental skin contact occur, remove immediately with a resin removing cream such as Kerocleanse Standard Grade Skin Cleanser or Rozaklens Industrial Skin Cleanser, followed by washing with soap and water- do not use solvent.
In case of contact with eyes rinse immediately with plenty of water and seek medical advice. If swallowed seek medical attention immediately – do not induce vomiting.
For further information consult the Material Safety Data Sheet available for this product.

Health and safety
J-Cure 20 Clear is flammable. Do not expose to naked flames or other sources of ignition.

Flash point: 40°C

Cleaning and disposal
Spillages of J-Cure 20 Clear should be absorbed onto sand, earth or vermiculite and transferred to suitable containers. The disposal of excess or waste material should be carried out in accordance with local legislation under the guidance of the local waste regulatory authority.
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J-Cure 20 Clear has a minimum shelf life of 12 months, 6 months for pigmented grades, when stored in the original unopened containers under normal warehouse conditions.

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Flash point:

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Refer to the local JNT.INC office or representative.
EXFLOW® SX-30
(Concrete Surface Hardner)

PRODUCT DESCRIPTION

Exflow SX-30 is high performed liquid type of surface hardener designed for industrial floors and provides long-term Savings and improved plant efficiency.

APPLICATION

- Indoors and outdoors
- In factories / In gas stations
- In garages, parking lots and roads.
- Floors exposed to abrasion and contamination
- In loading ramps and warehouse.

FEATURE & BENEFIT

- Dust free, hard, durable and abrasion resistant
- No color and no smell
- No after yellowing
- Excellent penetration into concrete
- Eco-friendly (solventless)
- Concrete Sealing
- Resistance to oil, grease and chemicals
- Easy to clean and maintain.
- ASTM - C-304 and ASTM - D-4060

SPECIFICATIONS

<table>
<thead>
<tr>
<th>Appearance</th>
<th>Clear Liquid</th>
</tr>
</thead>
<tbody>
<tr>
<td>Environment Temp</td>
<td>5.0 °C ~ 38.0 °C</td>
</tr>
<tr>
<td>Number of coating times</td>
<td>1 ~ 2 times</td>
</tr>
<tr>
<td>Specific gravity</td>
<td>1.12 ± 0.02</td>
</tr>
</tbody>
</table>
**TEST STANDARD**

<table>
<thead>
<tr>
<th></th>
<th>After Sealing</th>
<th>Before Sealing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dosage</td>
<td>11g/100mL</td>
<td>20g/100mL</td>
</tr>
<tr>
<td>Dry time</td>
<td>4 ~ 6hr (8hr is recommended)</td>
<td>It can be different by ambient temp.</td>
</tr>
</tbody>
</table>

**PACKING & STORAGE**

Available in 200Kgs Close Type Drum / 20L Pail
It is recommended to store in tightly closed packaging

**SHELF LIFE & PRECAUTIONS**

By 12month, if stored according to manufacturer’s instructions.
EXFLOW® SX-30 contains no hazardous substances however if it is contacted on skin or clothes need to be washed with enough flowing water.

**Case Studies**

Applications
Newly constructed parking lot
Newly constructed warehouses and restaurant