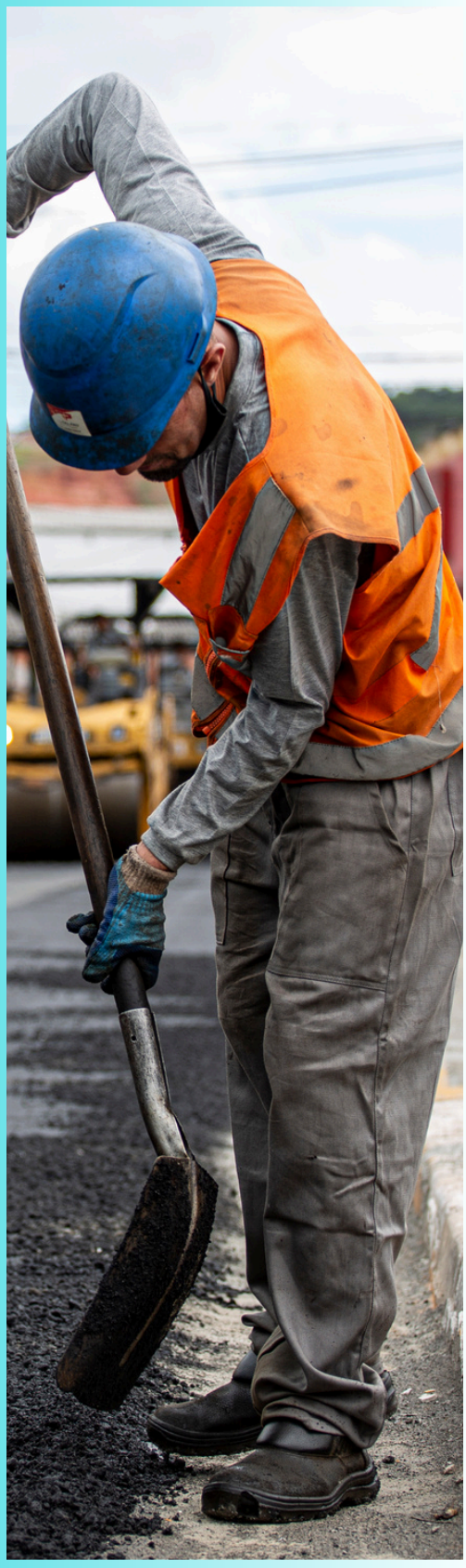
CCI ANTI-RUTTING ADDITIVE

CCI-ARA-6000/8000/10000

CYANCLAY



PRODUCT INTRODUCTION

CCI Anti - Rutting Additive - is black granular solid, which is a type of asphalt mixture additive composed of various polymer composites. It significantly enhances the high-temperature stability of asphalt mixture through multiple actions such as surface adhesion, reinforcement, filling, as well as asphalt, and elastic recovery. Moreover, it also improves and enhances the water stability and low temperature crack resistance of the mixture.

FEATURES AND ADVANTAGES

- **For Transportation** : It is granular and easy to transport without using special carrier.
- **Storage** : It can be stored at room temperature without any special equipment.
- **Construction** : In the process of mixing, spreading, and rolling, there is no need to make any changes to the equipment.
- **Rutting** : After adding, the mobility of asphalt mixture is 80% higher than that of matrix asphalt mixture, which indicates that the rutting resistance of asphalt pavement has been greatly improved.
- **Fatigue** : After adding, the fatigue performance of asphalt mixture is increased by 40%, and the entry resistance of asphalt pavement is enhanced.
- **Water Stability** : After adding, the freezing-thawing splitting strength of asphalt mixture can reach 97.95% improving the ability of asphalt pavement to resist water damage.
- **Low Temperature:** After adding, the maximum bending strain of the mixture is increased by 34%, and the bending strain is increased by 73%. At the same time, the elastic recovery performance of asphalt binder is also greatly enhanced. The variable temperature is 10°C, so it is suitable for preventing temperature shrinkage crack below 10°C.

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Tower 1, BGC, Taguig, Philippines

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MAIN FUNCTIONS OF ANTI RUTTING ADDITIVE

- **Bonding Effect** : During the wet mixing and transportation process, the anti-rutting asphalt mixture additive partially dissolve or swells in the asphalt, forming a bonding effect. This leads to an increase in the softening point temperature, viscosity, and a decrease in the thermal sensitivity, thereby modifying the asphalt
- **Reinforcement Effect:** The microcrystalline regions formed by polymers possess considerable stiffness. During the mixing process, these microcrystalline materials uniformly fill the aggregate skeleton, bridging and crosslinking to form a fiber reinforcement effect, thereby enhancing the rut resistance of the asphalt pavement.
- **Embedding Effect:** The anti-rutting asphalt mixture additive softens temporarily during construction. Subsequently, these particles undergo thermal molding during compaction. This process is equivalent to fine aggregates with high adhesion filling the voids in the aggregate skeleton, increasing the structural framework of the asphalt mixture, and simultaneously reducing the permeability of the formed pavement surface.
- **Deformation Recovery Effect:** The elastic component of the anti-rutting asphalt mixture additive possesses the function of elastic recovery of the deformed portions of the pavement at higher temperatures, thereby reducing the permanent deformation of the formed asphalt pavement

APPLICATIONS:

- **Anti-Rutting Additive** are widely used in municipal roads, uphill sections, heavy-duty sections, crossroads, bus harbors, highways and high-grade roads, airport runways, mountainous roads, bus lanes, container yards, various repaired pavements.

Physical Test Result of ARA				
Item	Unit	Standard Index	Test Result	ASTM
Average Particle Size	mm	≤ 5mm	≤ 5mm	C136
Density	g/cm3	< 1.0	0.90	D792
Melt Flow Rate	g/10min	> 1.0	1.5	D1238
Physical Test Result of Asphalt Mixture with ARA				
Item	Unit	Standard Index	Test Result	ASTM
Marshall Stability	kN	≥7.5	12.7	D6927
Flow value	1/10mm	20-40	37	D6927
Residual Marshall stability	%	≥75	89	D6927
Dynamic Stability	(times/mm)		6000-10000	

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METHODS:

1. Laboratory Test Method

Mineral heating temperature	190 ~ 200°C
Asphalt heating temperature	determined according to the type of asphalt
Asphalt mixture mixing temperature	180°C
Compaction and rutting forming temperature	160°C

Table 1 : Temperature Control Parameter for LABORATORY

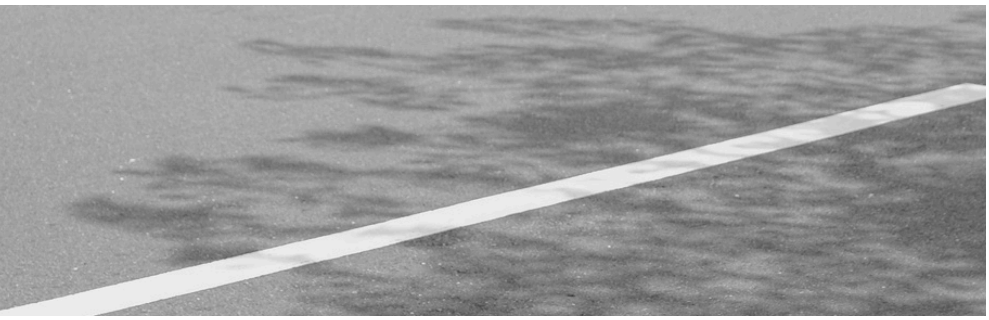
- The main process for mixing ARA asphalt mixture in the laboratory is: The ARA should be released at the same time that the hot aggregate is released into the mixing pot, and the dry mixing timer should be started. "Dry mixing" for **30s** to make the ARA evenly dispersed in the mineral. Then add the bitumen according to the predetermined amount and mix for **90s**; finally add the mineral powder and mix for 90s.

2. Industrial Construction Method

Aggregate heating temperature	180 ~ 200°C
Mixing temperature of asphalt mixture	175±5°C
Paving temperature	≥165°C
Compacting temperature	≥150°C

Table 2: Temperature Control Parameter for INDUSTRIAL

- ARA and hot aggregate into the mixing pot at the same time for **8 seconds- 15 seconds** “dry mixing”, then put bitumen into for **35 seconds** "wet mixing", but it should be adjusted according to the performance of the on-site mixing equipment. The asphalt mixture shall be uniformly mixed and all the mineral particles shall be covered with bitumen binder and there is no white material, no agglomeration or serious separation of coarse and fine aggregates



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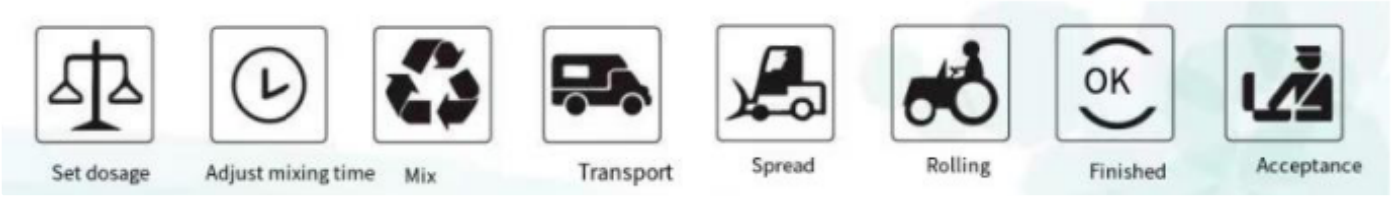
METHODS:

3. Design Dosage

- The weight ratio of asphalt mixture is **0.3%-0.6%**
- For roads with heavy traffic and a high number of heavy vehicles, high load limits are used. Special sections may allow a mix of over **0.6%**

4. Packaging

- Each bag is designed to accommodate a net weight of 25 kilograms, ensuring optimal storage capacity and efficient handling for transportation.



5. STORAGE AND TRANSPORTATION

- No special storage conditions required. Transport and store in dry and waterproof conditions, and avoid direct sunlight. Can be stored for 3 years.

Note: Some of the technical terms and details might need further clarification based on the specific context and requirements of the translation.

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