Ashine ceramic cup wheel that addresses the problem of burning ceramic surface

Background

The ceramic cup wheel is a more efficient solution for edge work, reducing steps and labor costs. However, there is a common issue with ceramic cup wheels on the market: the surface of ceramic cup wheel will appear scorched black area after continuously grinding for a period of time. Depending on different scenario, the burning issue can affect the efficiency and effectiveness in different extent.

Ashine continually updates formulas and tests their efficiency to tackle the problem of burning ceramic surface and improve the tooling performance. This report was conducted to compare Ashine Super Edge with one of the most popular ceramic cup wheels on market, Ashine upgraded ceramic cup wheel showed strong data performance in resolving such challenges, as well as a significant potential to improve edge work efficiency and ease of transfer to polishing steps.

Test Samples

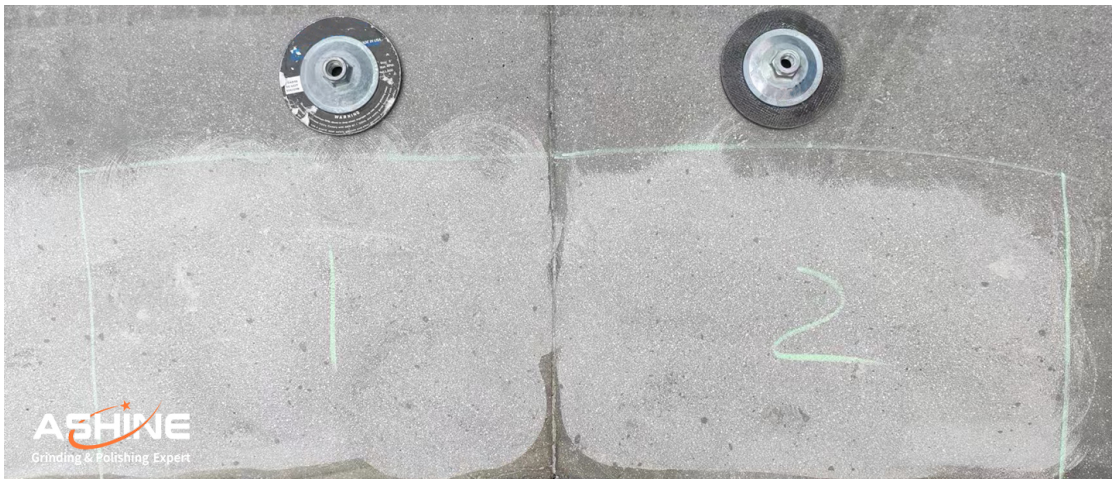
Sample No.1	The competitor’s ceramic cup wheel 50 grit
Sample No.2	Ashine SuperEdge ceramic cup wheel 50 grit

Test Condition

Date	2022.10.27
Test Site	Ashine Manufacture Center
Surface Condition	Soft concrete floor with Moh’s hardness of 3-4
Testing Machine	Φ125mm hand-held angle grinders

Test Process

1. Firstly, use the Φ125 hand-held angle grinders with swirl cup wheel 16# to grinding the concrete floor No.1 and No.2 to the appropriate extent.



Before the Test

2. Secondly, use the grinders (2200W, 6700RMP) with test sample to grinding the test area for ten minutes. (Floor No.1 for Sample No.1 and Floor No.2 for Sample No.2)

After the Test

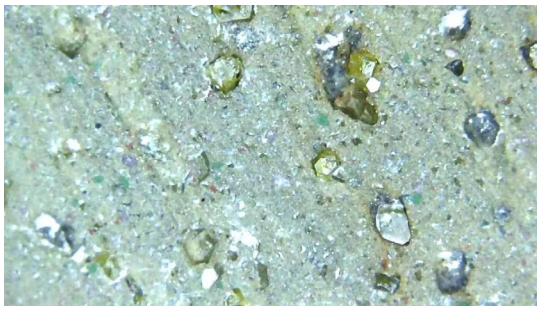
3. Observe the wheel surface of samples No.1 and No.2 after grinding with optical microscope to verify if there is any scorched black area on the surface.

4. Collect the numerical values of the protrusion height of diamond grits of samples No.1 and No.2, as well as the dust extracting content of samples No.1 and No.2 during the grinding process by Blastrac vacuum, in order to compare the aggressiveness and grinding efficiency of two samples.

Dust Collection

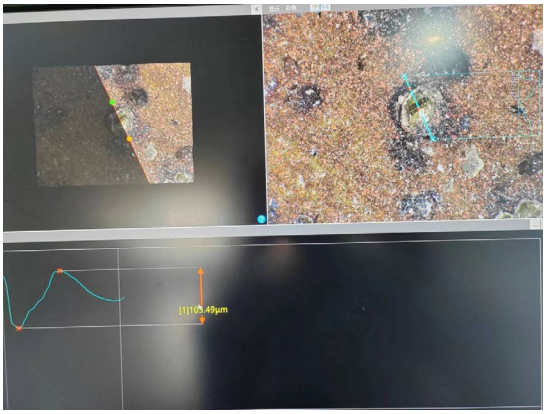
Test Data

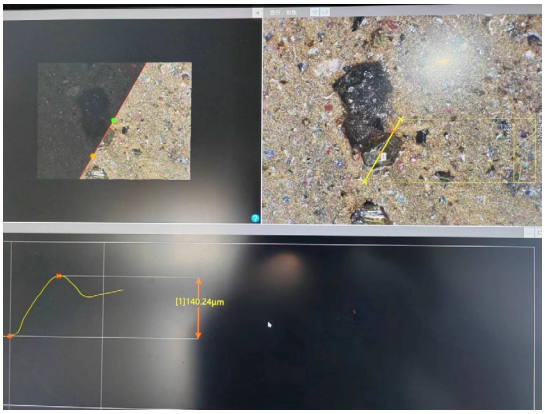
Wheel surface condition

Sample	Tooling surface after grinding
No.1	  The bond is scorched black, especially in the area around the diamond, which shows the bond has a poor temperature resistance.
No.2	  It cannot be found the scorched black area on the surface of Sample No.2#, which shows the bond has a high temperature resistance.

According to the wheel surface condition comparison, it can be found that Sample No.2 has a better temperature resistance, indicating that Sample No.2 can minimize the effect from burning issue and keep its performance optimal.

Protrusion Height of Diamond Grits





Sample No.1 Sample No.2

Samples No.	Protrusion height of diamond grits	
	Height (μm)	Average (μm)
No.1	103.49 51.42 71.74 81.57 55.12	72.67
No.2	97.01 140.24 97.78 87.82 49.90	94.55

Sample No.2 has 30% higher protrusion of diamond grits than Sample No.1. Diamond grit as the main abrasive plays the essential role in grinding process, and the protrusion height is one of the main factor to inspecting the grinding efficiency: the grinding efficiency and object removing extent is proportional to the diamond protrusion height.

Dust Collection Weight

Dust collection weight after grinding was tested under the same grinding condition.

Sample No.1

Sample No.2

Samples No.	Grinding condition	Dust collection (kg)	Wear extent (mm)
No.1#	$2m^2$ 10 minutes.	0.53	0.41
No.2#		0.80	0.33

With the set time and testing area, the dust conducted from sample No.2 is approximately 50% more than that of sample No.1, and the wear extent of sample No.2 is 19.51% less than sample No.1. With the the formula of grinding ratio:

$$G = \frac{\Lambda_w}{\Lambda_z}$$

G=grinding ratio;

Λ_w =The volume of the object(floor) removed per unit time under normal grinding force;

Λ_z =The volume of the subject(samples) removed per unit time under normal grinding force;

G2 is 87.51% more than G1, which indicates that the grinding efficiency of Sample No.2 is 87% better than Sample No.1