COMPOWDER
Abrasive Solution

Work Smarter
Grind Harder...

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Powder Composite Engineering Company was established in 2024 with a research and technology focus, aiming to produce industrial consumable products. These products include powder-based metal and ceramic matrix composites, a significant portion of which are used as grinding wheels and abrasive tools in various industries such as automotible factories, casting, and machinary.

The company's goal is development and diversification coupled with innovation and the expansion of composite materials technology. In line with this objective, its mission has become the production of industrial consumables in the abrasives sector.

These products include various types of grinding wheels, mounted stones, sharpening ceramic disc, and hand tools, all manufactured under a specialized brand “**COMPOWDER**”.

Abrasive Particles

Alumina Corundum is recognized as the most abundant and stable form of aluminum oxide found in nature. Its chemical formula is Al_2O_3, and it's also known as alpha-alumina or α-alumina. This mineral, with its hexagonal crystal structure, exhibits exceptional properties including high, remarkable thermal stability, and chemical inertness.

Corundum is the crystalline form of aluminum oxide (Al_2O_3), typically containing varying amounts of metallic elements like iron, titanium, vanadium, and chromium as impurities.

This rock-forming mineral is naturally transparent, but it can display different colors depending on the presence of transition metal impurities within its crystal structure. The name "corundum" originates from the Tamil-Dravidian word "kurundam" (sapphire), which appears as "kuruvinda" in Sanskrit.Aluminum oxide is considered an amphoteric oxide, known by various names such as alumina and corundum. The diversity of names for aluminum oxide reflects its numerous applications across different industries. Corundum is found as the most abundant and stable form of aluminum oxide in nature and is also referred to as alpha-alumina.

Silicon carbide (SiC) abrasive particles are a synthetic material renowned for their extreme hardness, sharp cutting edges, and chemical resistance. It's only surpassed by diamond, cubic boron nitride, and boron carbide in hardness. These properties make it an excellent abrasive for grinding, cutting, and polishing a wide range of materials.

There are two primary grades of silicon carbide abrasives: green silicon carbide and black silicon carbide. While both are composed of SiC, they differ significantly in their purity, properties, and applications. Green SiC is characterized by its high purity, typically ≥98.5% SiC, with some high-end products reaching ≥99.5%.

Black SiC has a lower purity compared to green SiC, typically ranging from 95% to 98% SiC. This is due to the use of ordinary quartz sand and regular petroleum coke as raw materials, which contain higher levels of impurities, especially metal oxides like iron and aluminum. The smelting time is also shorter.

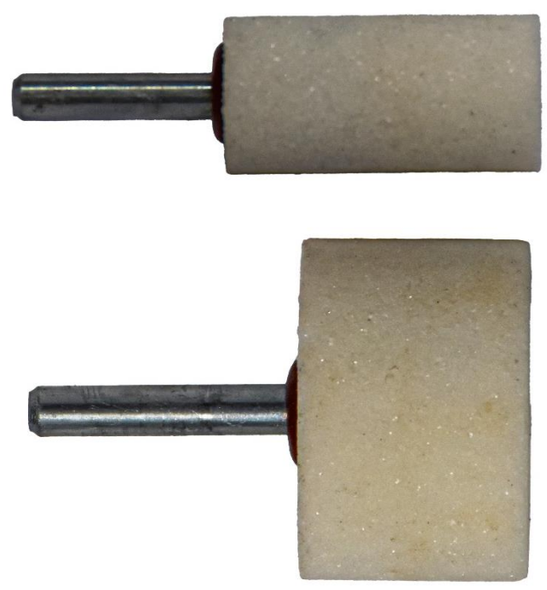
Mounted Stones

Mounted stones are used as abrasive tools to remove sharp edges and complete the final finishing process of industrial parts. This tool is attached to the shaft or spindle of a die grinder or miniature milling machine and removes material through high-speed rotary motion. Mounted stones are primarily made of sharp, abrasive alumina particles that are bonded together with other additives and a binder to form a unified structure. The pin or collet, which comes in various sizes, is specially and securely attached to the stone in a way that prevents separation even at high temperatures.

Compowder's mounted stones utilize nanotechnology in their formulation, leading to improved hardness, fracture toughness, and fatigue resistance. This results in enhanced performance and safety during use and finishing operations. The adhesive and roll-forming mechanism of the metal pin create a very strong connection between the metal part and the stone, which contributes to the tool's lifespan and reduces costs.

Mounted Stones – Shape type A

COMPOWDER Code	DxL	ϕ3mm	ϕ6mm	ϕ8mm	36	46	60	AR	WA	CG
CP-1	6x13	●					●	●	●	
CP-2	13x6	●				●	●	●	●	
CP-3	13x13	●				●	●	●	●	
CP-4	16x16	●				●	●	●	●	●
CP-5	20x30		●		●	●		●	●	
CP-6	20x40		●		●	●		●	●	
CP-7	25x25		●		●	●		●	●	●
CP-8	40x20		●		●	●		●	●	
CP-9	40x25		●		●	●		●	●	●
CP-10	40x40			●	●	●		●	●	



Mounted Stones – Shape type W

COMPOWDER Code	DxL	ϕ3mm	ϕ6mm	ϕ8mm	36	46	60	AR	WA	CG
CP-11	6x13	●					●	●	●	
CP-12	13x28	●	●			●	●	●	●	
CP-13	20x30		●		●	●	●	●	●	
CP-14	25x40		●		●	●	●	●	●	●
CP-15	30x45		●		●	●		●	●	

Abrasive Type
Fused Aluminum Oxide “AR” pink, white “WA” and mixed, Silicon Carbide “CG” green and black

Grain Size 36, 46, 60

Standard Hardness N, O, P

Application Mold Processing, Mold-production, Tool Grinding, Drill Sharpener, General Purpose

Circular Speed Up to 32000 rpm

EN 12413

Grinding Wheels

Grinding Wheels and it’s unique properties make it valuable in various industrial processes. grinding Wheels is hard, chemically inert, and has a high melting point. Due to the strong bonds between its atoms, it's utilized in diverse industries, playing a crucial role in the production of complex and varied metal components.

Some industrial parts are manufactured using grinding Wheels, including components made from molten aluminum, silicon carbide, and steel balls. This mineral significantly enhances the quality and precision of various parts.

Grinding Wheels is produced in different sizes, with its application in various industries (such as the foundry industry) depending on the type of bond used. In the Iranian market, resin-bonded and ceramic-bonded abrasive stones are the most commonly used.

Grinding Wheels consist of two main parts: the abrasive grains and the bond that holds these particles together. In the resin-bonded type, the abrasive grains are connected by phenolic base resin, which is cured at 195 degrees Celsius. In the ceramic-bonded type, the abrasive grains are produced using a ceramic bond containing frit, which is cured at approximately 1200 degrees Celsius.

Grinding Wheels – Aluminum Oxide- Saw Sharpening

COMPOWDER Code	ODxTxID	60	80	WA	AR	VB	RB
CP-11	150x6x20	●					●
CP-12	150x8x20	●	●			●	●
CP-13	175x8x20		●		●	●	●
CP-14	200x8x20		●	●	●	●	●
CP-15	200x10x20		●	●	●	●	

Grinding Wheels – Aluminum Oxide Steel Grade

COMPOWDER Code	ODxTxID	36	46	WA	AR	VB	RB
CP-21	125x20x20	●		●			●
CP-22	125x25x32	●		●			●
CP-23	150x20x20	●	●	●		●	●
CP-24	150x25x32	●	●	●		●	●
CP-25	175x20x20		●	●	●	●	●
CP-26	175x25x32		●	●	●	●	●
CP-27	200x25x20	●	●	●			
CP-28	200x25x32	●	●	●	●	●	●
CP-29	250x25x76	●	●	●	●	●	

Abrasive Type
Fused Aluminum Oxide “AR” pink, white “WA” and mixed,

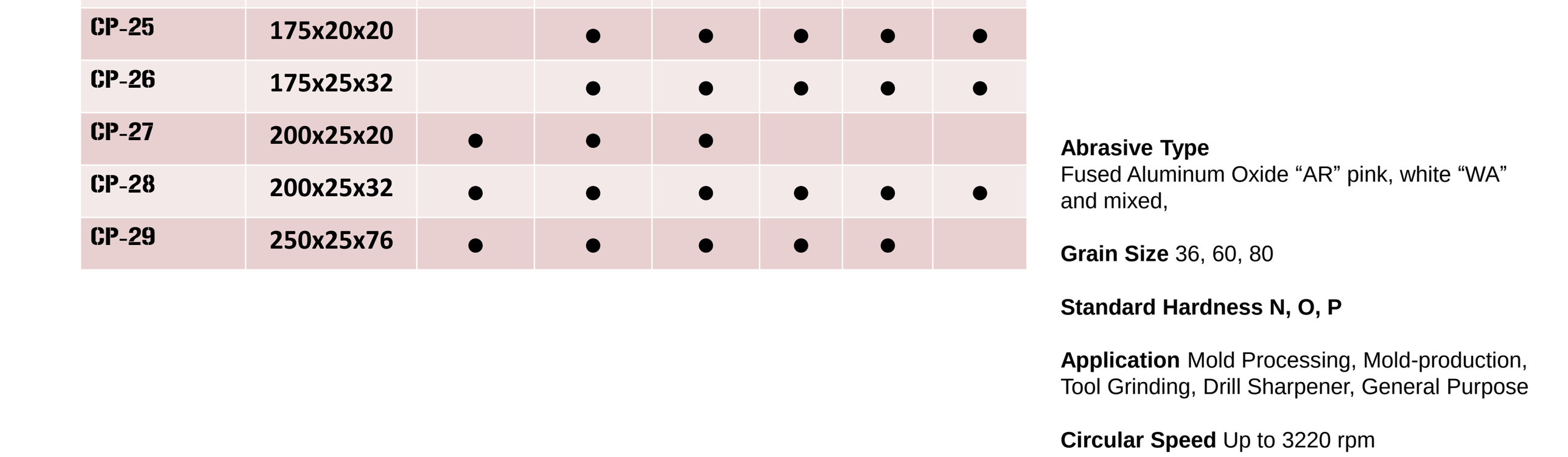
Grain Size 36, 60, 80

Standard Hardness N, O, P

Application Mold Processing, Mold-production, Tool Grinding, Drill Sharpener, General Purpose

Circular Speed Up to 3220 rpm

EN 12413



Grinding Slab – Aluminum Oxide

COMPOWDER Code	WxLxH	60	80	WA	BA	VB	RB
CP-31	80x50x22	●		●			●
CP-32	150x70x25	●	●	●		●	●
CP-33	175x70x25		●	●	●	●	●

Grinding Wheels – Silicon Carbide

COMPOWDER Code	ODxTxID	60	80	SCB	SCG	VB	RB
CP-41	150x13x10	●					●
CP-42	150x13x20	●	●			●	●
CP-43	175x13x10		●		●	●	●
CP-44	175x20x20		●	●	●	●	●
CP-45	200x20x32		●	●	●	●	

Abrasive Type
Silicon Carbide “SCG” green and black “SCB”

Grain Size 36, 60, 80

Standard Hardness N, O, P

Application Mold Processing, Mold-production, Tool Grinding.

Circular Speed Up to 3220 rpm

EN 12413

Factory address:

13[km] of Lashgari Highway, No. 18, Group of Tehran Factories, Tehran, Iran.

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