# Resin Bonded Abrasives

## Sample of Wheel Label

Below is an example of a label that can be found on United Abrasives' wheels. We feel it is important to include as much information as possible on our labels so the end user has the pertinent information he needs to operate the wheel. All of our labels are baked on the wheels during the manufacturing process, so the label remains intact throughout the life of the wheel.


## Storage and Handling

All abrasive wheels are breakable and therefore care shall be exercised in handling and storage to prevent damage. The following rules, which are based on experience, should be observed:

- Handle wheel carefully to prevent dropping or bumping
- Do not roll wheels (hoop fashion)
- Use trucks or other suitable conveyances to provide support and protection in transporting all wheels which cannot be carried by hand
- Suitable racks, bins, drawers or boxes shall be provided to store the various types of wheels used
- Abrasive wheels should be stored in a dry area not subject to extreme temperature changes since some bonds may be affected by excessive humidity and temperature differentials
- Racks should be located as near as practical to the grinding location, but never where there is danger of damage from passing trucks, crane handling equipment or excessive vibration

# Anatomy of a Wheel

## What is a Bonded Abrasive?

A resin bonded abrasive is a grinding or cutting tool composed of abrasive grains which are held tightly together by a bonding agent and typically reinforced with a woven material. Within the bonded abrasives category are grinding and cutting wheels, as well as "stones" in a variety of shapes and sizes.

## 3 Main Components of Resinoid Bonded Abrasives

### ① Abrasive Grains

Abrasive grains are particles of man-made abrasive compounds. While some manufacturers use recycled grains, United Abrasives uses only high quality, virgin grains that are made to our specifications. The chemical structure of the grains determines the physical properties of the grains (i.e. shape, sharpness, hardness, friability). Common grain types used in making bonded abrasives include:

- A - Aluminum Oxide
  A tough blocky shaped grain used for cutting metals and other high tensile strength materials without excessive fracturing
- C - Silicon Carbide
  A very hard and very sharp abrasive suited for non-metallic materials such as concrete
- Z - Alumina Zirconium (also referred to as Zirconium)
  A very fine, dense crystalline grain which can be used for rugged stock removal
- SG - 3M Cubitron™
  An exclusive patented ceramic aluminum oxide, two or three times tougher than standard aluminum oxide

### ② Bonding Agent

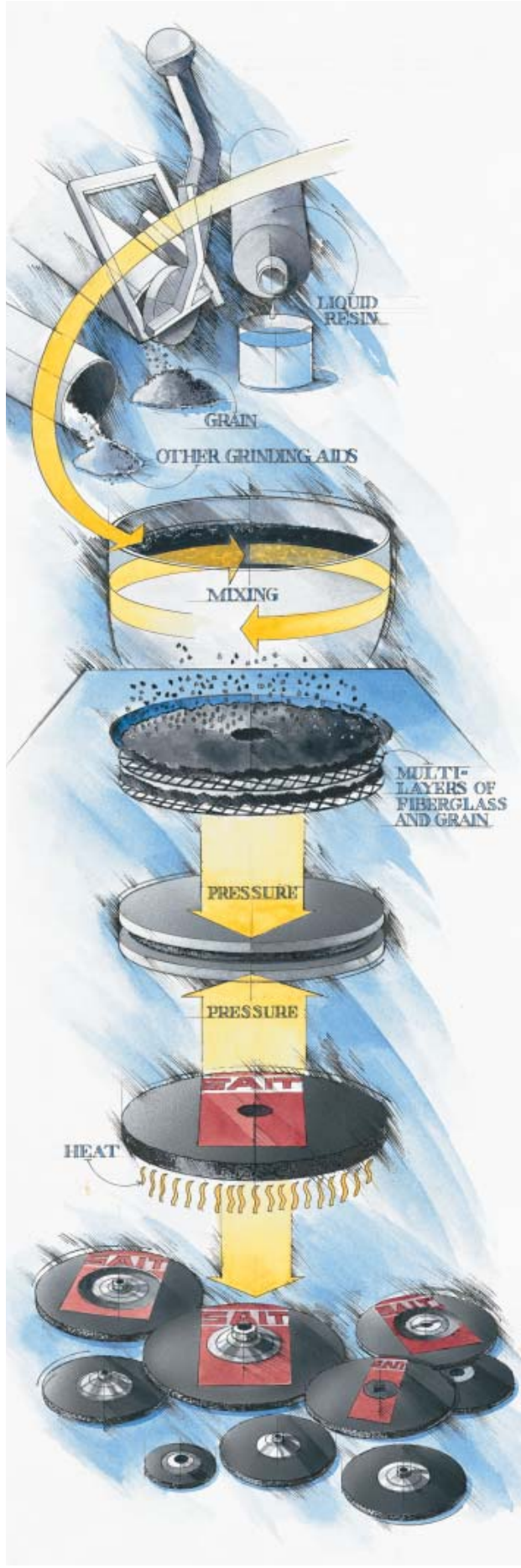
The bonding agent that holds the grains together determines the resistance of the wheel. United Abrasives uses a resinoid bond that is formulated to meet the unique specifications of each product.

### ③ Reinforcement

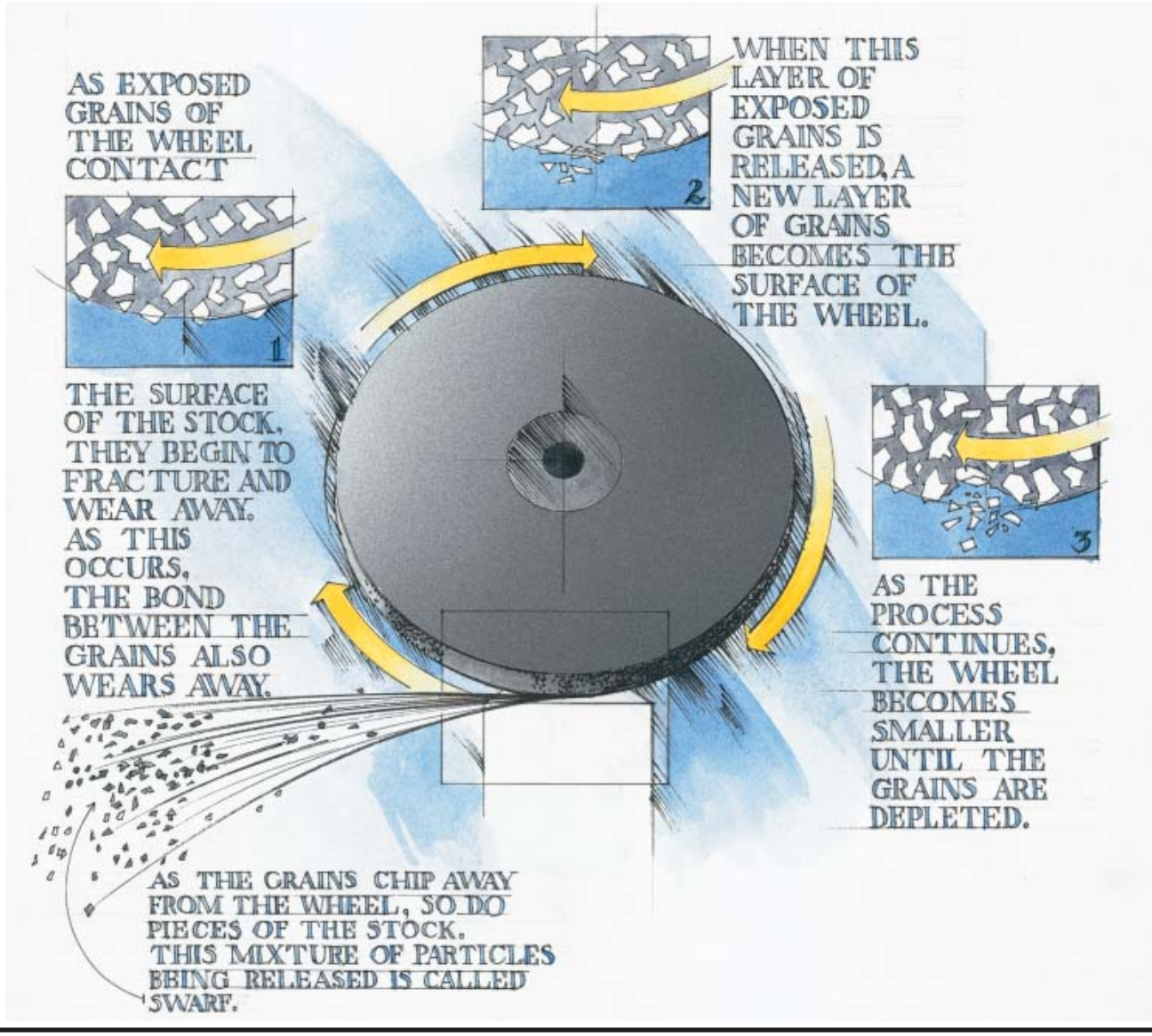
The reinforcement material provides extra strength to use the wheel at maximum RPMs and withstand lateral pressure that is applied during use. United Abrasives uses multiple layers of long stranded fiberglass which are woven to form an exceptionally strong reinforcement layer specific to the application.

## Combining the 3 Components

During the manufacturing process, these three components are combined to form a grinding wheel. The grains and bonding agents are measured, combined, and pressed in an automated hydraulic press. United Abrasives' labels are also incorporated into the manufacturing process and therefore remain intact throughout the life of the wheel.



# How a Wheel Works

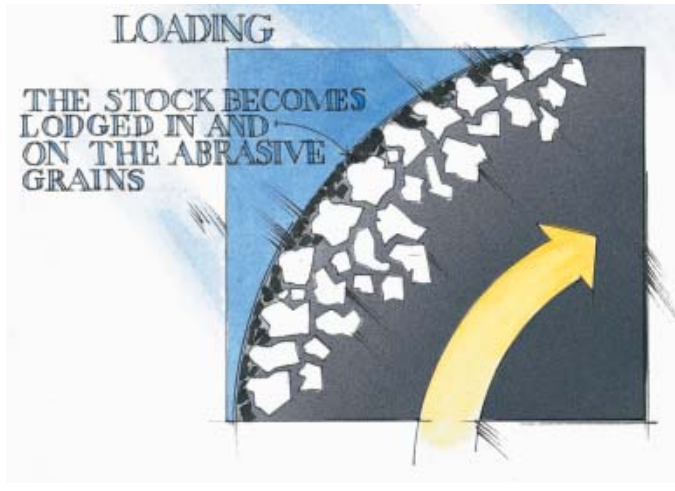



## Common Occurrences With Grinding/Cutting Applications

As a wheel is grinding and/or cutting, some situations may occur with the application such as glazing or loading. Here is a description of each of these occurrences and some possible solutions.


### Solutions to Glazing

- Dress the wheel for a temporary solution
- Use a softer bond and/or coarser grit wheel




### Solutions to Loading

- Dress the wheel for a temporary solution
- Use the correct wheel for the application