

What is what we call Porcelain Tile?

Very simply what we normally call porcelain tile is classified as:

"highly vitrified stoneware tile"

Porcelain tiles are considered an upgrade of white clay single fired tiles, which were themselves an upgrade of red clay single fired tiles.

To make a long story short, here is a brief chart of the major three differences between these technologies also according to regulations:

Water absorption: **Porcelain must be below 0,5%**
White & Red clay tiles vary from <0,5% to >10%

Firing temperatures: **Porcelain is fired at minimum 1240° c (abt. 2550° f)**
White & Red clay tiles are usually fired around 1100° c (abt. 2240° f)

Breaking strength: **Porcelain tolerances abt. 27N/mm2 (abt. 3915 psi)**
White & Red clay tiles are abt. 22N/mm2 (abt. 3190 psi)

Because of the above, porcelain tiles require higher quality raw materials.

Percentages of these raw materials have been changing in the last years, in order to accommodate **faster production times, modern technologies, market competition** and **manufacturers product mix**, here is the approximate "recipe":

Quartz (it can vary from 10% up to 20% in weight):
It's considered the "skeleton" or the structure of the tile.

Feldspar (it can vary from 25% up to 35% in weight):
It's considered the "blood" which is capable of closing the pores during vitrification.

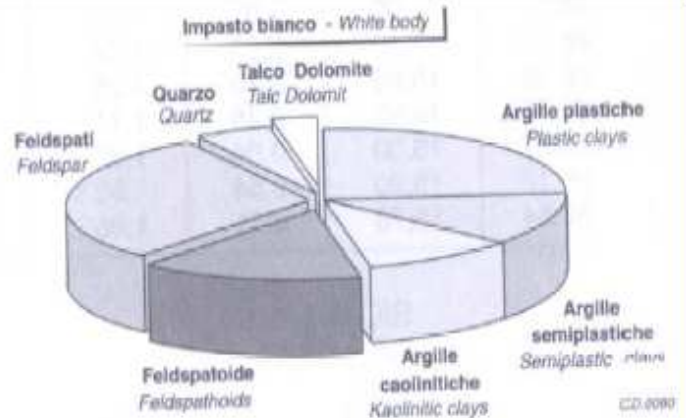
Plastic Clays (they can vary from 10% up to 20% in weight)
They are considered the "muscles" and give "plasticity and workability" because of their water molecules. They are divided in Kaolinite Clays, Illite Clays, Clorite Clays.
Also called Ball Clays.

Kaolin (it can vary from 30% up to 40% in weight)
Once again it provides plasticity.
Also called China Clay.

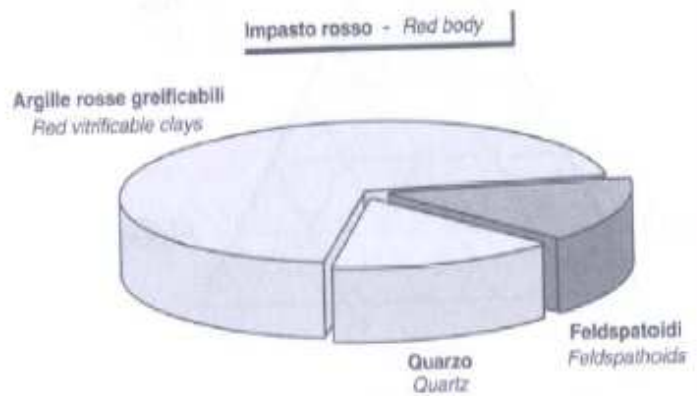
Carbonates (calcium & magnesium)

Here are some classic examples of white body and red body compositions, which themselves have also changed in the last few years, in order to remain price wise competitive.

Argille plastiche	<i>Plastic clays</i>	10 - 15 %
Argille semiplastiche	<i>Semiplastic clays</i>	15 - 25 %
Argille caoliniche	<i>China clays</i>	10 - 20 %
Feldspatoidi	<i>Feldspathoids</i>	25 - 35 %
Feldspati	<i>Feldspars</i>	5 - 10 %
Quarzo	<i>Quartz</i>	10 - 15 %
Talco	<i>Talc</i>	1 - 2 %



Argille rosse grefficabili	<i>Red vitrifiable clays</i>	70 - 80 %
Feldspatoidi	<i>Feldspathoids</i>	15 - 20 %
Quarzo	<i>Quartz</i>	10 - 20 %



Sergio Barro

E-mail: sergio.barro@theporcelainjungle.com

Educational Web: www.theporcelainjungle.com