

PRODUCTION OF RECYCLED SAND FROM CONSTRUCTION AND DEMOLITION WASTE

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THE PROBLEM

- ✗ C&D waste **500-1.000** kg/year/hab.
- ✗ Sao Paulo (city) 10.000.000 tons/year
- ✗ Aggregates costs (**100%** in 4 years)
- ✗ Rising of disposal costs
- ✗ **Illegal** dumping
- ✗ **Expensive** management
USD 11.000.000/year (Sao Paulo)
- ✗ **Low recycling rates** (<< 10% world)

SAND MARKET

- ✗ **Environmental** problems on sand extraction
- ✗ High **transportation distances** (>100 km)
CO₂ emission, traffic and road abrasion
- ✗ High costs: **2/3** is due to transportation

High demand for **sand**
C&D **fine fraction** is about **40 to 60% w/w** and the recycling rate is insignificant

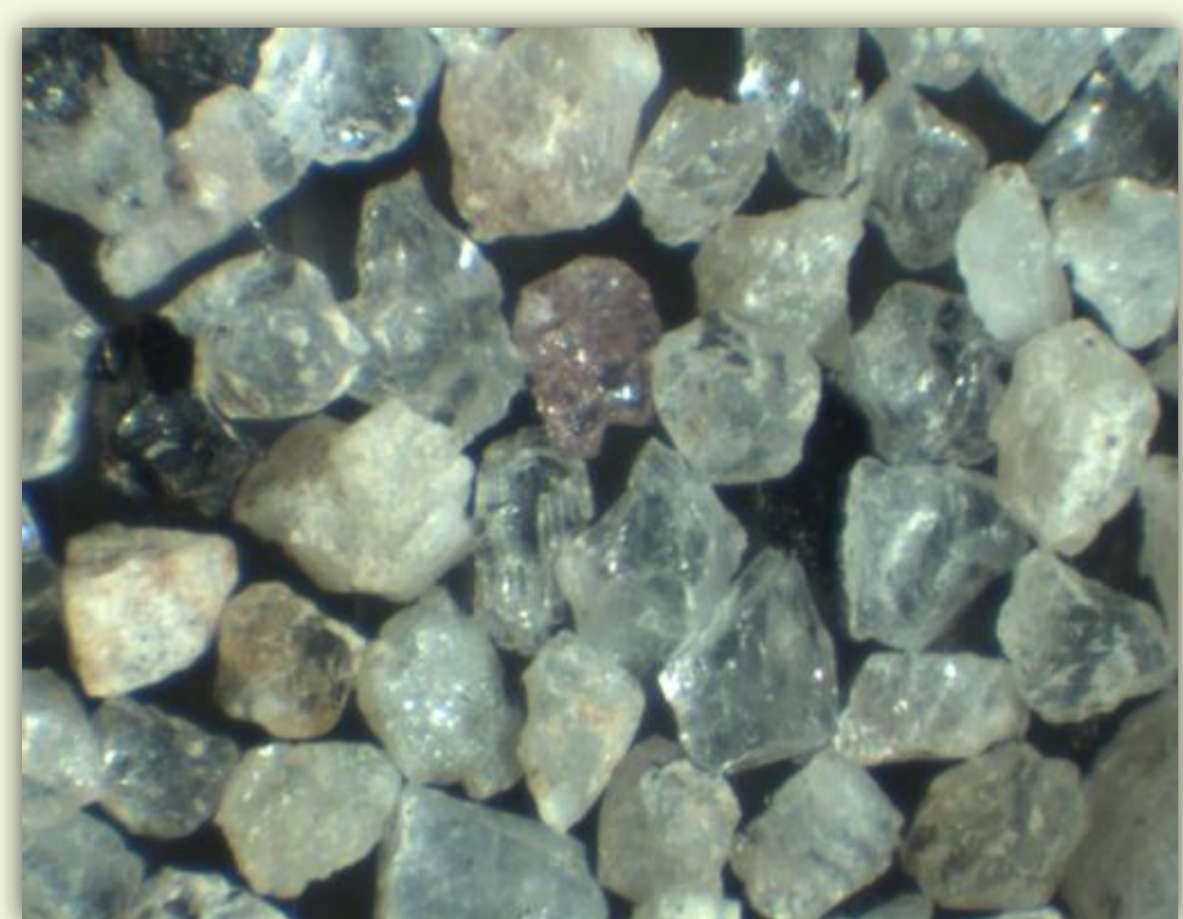
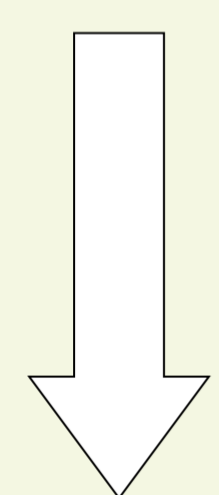
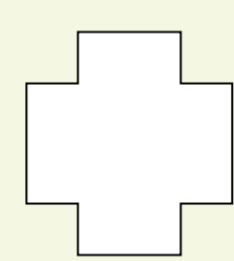
CHALLENGE AND INNOVATION

APPLY MINERAL PROCESSING TO PRODUCE HIGH QUALITY SAND FROM C&D WASTE



Optimization on comminution

Removal of high porosity phases
(high content of cement paste)



FINAL PRODUCT
High Quality Recycled Sand

low porosity
roundness shape

DEVELOPMENT OF ACCURATE CHARACTERIZATION PROCEDURE

- ✓ Particle size
- ✓ Shape
- ✓ Surface area
- ✓ Water absorption
- ✓ Envelop density
- ✓ Content of porous phases

IMPLEMENTATION OF QUALITY CONTROL PROCEDURES

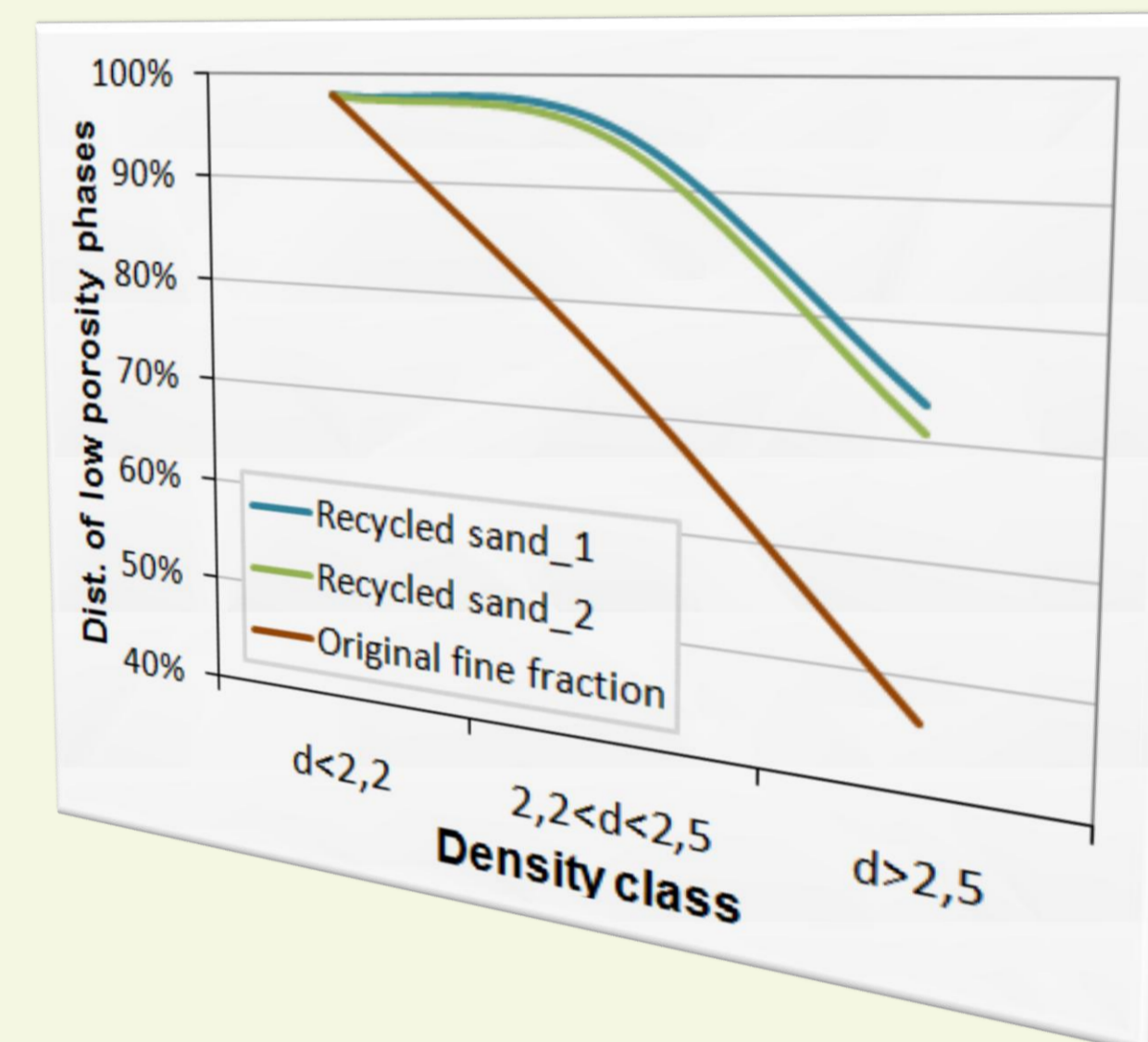
DISCUSSION

COMMINUTION

- Production by demand
- Adequate particle size
- Improve particle shape
- Reduce porous phases → **70% S.G.>2,5**

MINERAL SEPARATION

- Remove porous phases
low density, high cement paste content
- Remove fines



CDW RECYCLING IS CRUCIAL FOR SUSTAINABLE CONSTRUCTION

- ✓ Reduction of environmental impacts extraction and dumping
- ✓ Increase the life cycle of construction materials

Recycling plants close to the market

- ✓ Reduce transportation distances, costs and CO₂ emission
- ✓ Reduce housing costs
- ✓ Minimize disposal areas

Business opportunity

- ✓ New and valuable market