Durocs 1120

Binding agent for coverings and pavement joints, permeable to water

Durocs-permanent joints 1120 is a binding agent, special for manufacturing of binding agent depleted with a lot of hollow space, but even so permanent joint mortar made of glass sand, able to work under pressure. Prefered applications are joint mortars, permeable to air and water for pavement coverings, made of abrasive sand for convenient traffic routes in parks.

Fast hardening, anhydrous and thin layered screeds with high resistance can be made of glass sand (also in combination with special light extenders) and Durocs 1120. This application are with increasingly interest to be found at retrofit, particularly, when weight must be cut down and undersurfaces must be layable fast.

Durocs 1120 can be worked up with dry sand, broken stones and the gravel fraction. The binding agent is reacting chemically with the surfaces of the mineral materials. Everything is getting agglutinated by Durocs.

Durocs 1120 is ready to use in delivery form without addition of any additives. Processing defects can be avoided. After mixing with aggregates, it is reacting very fast by contact with air. There are no distracting or environmental harmful byproducts or reaction products produced.

The hardened mortars are chemically durable, viscoplastic polymeric mortars with good mechanical resistance and excellent resistance against environmental influences.

Procession

Durocs 1120 can be used as binding agent for all usual sands, fine gravels and broken stones, as well as for expanded clay, cellular glass, vermiculite or chipped wood. The used aggregates must be dry, without any cohesive ingredients and without fine grain.

Durocs 1120 is not able to produce liquid-tight mortars. For the production of mortar, Durocs and aggregates must be mixed with appropriate mixing machine. The usual amount for addition of Durocs 1120 to water and air premeable joints and coverings is 2 - 4 weight per cent, relating to the weight of mineral ingredients (aggregates) of the mixture. The mixed compound must be installed immediatelly, without intermediate bearing.

Durocs 1120 is a nearly dry, light earth-moisted seeming compound and not adhesive. Easy and unproblematic to apply, to plane and to consolidate.

Depending on the ambient temperature, the processing time of the Durocs sand mixture is between 40 and 60 minutes. With the starting hardening reaction, the mortar is getting more and more gluey.

All usual mixing machines are able for setting up the mixture of Durocs 1120 and the choosen aggregate. The amount of binding agent in the mixture is humble. To avoid mixing mistakes and with it installation problems, we recommend to use high-capacity compulsory mixer or similar equipment. We do not recommend the use of rotary-drum mixer. They are difficult to clean.

For filling, sweep the premixed Durocs mortar into the joints in pavement. Use a rough besom. Consolidate the joints with a light vibrating plate until the joints are saturated. Sweep the finished area with a fine besom to consolidate the joint surface and to improve the optical effect. Protect the installed mortar of wetness until the hardening process is over.

Durocs 1120 is not yellowing under influence of ultraviolet rays (sunlight). The self-colour polymer is humble, so it is no problem to use the product as binding agent for very bright coloured sands.

Meal grain free sands are appropriate to get stable joints which are premeable to water. Optimal results can be reached with grain fractions between 0,2 and 0,7 mm. Fractions with grain size > 1 mm are not suitable for pavement joints.

The demand of binding agent is rising with higher proportion of sand fractions <0,5 mm. This is a result of the larger surface of the acceptance. Adjust the amount of Durocs 1120 to the higher consumption of binding agent to guarantee the resistance of the mortar.

Lanes and areas around trees

Pre-finished mixtures of dry sand and 2-4 % Durocs are not adhesive, they seem to be dry. For the assembly of coatings, it is the easiest way to pull them over with a gage. Level the coating by knocking with a trowel or scoop, compress it and plane it. Bigger surfaces can be pulled over with planks and vibrating plates. On big surfaces (for example lane construction), it is certainly possible to assemble area finisher.

An exact grading (with adequate fraction of support grain) of the used sand mixture is demanded for the use of rotating power trowels. Normally, this can only be done with industrial pre-mixed aggregates.

Lanes, close to nature, premable to water and air made of Durocs 1120 and sand.

Fast hardening screeds , made with Durocs 1120 as binding agent are ideal building materials for reconstruction of old buildings. By use of special aggregates, it is possible to build light screeds with volumetric weight of 500 kg/m^3. They are water free, layable after 24 hours and able as supporter for all tilings. They can also be laid afloated.

Screeds and levelling courses of sand and Durocs 1120 are easy to handle.

The almost dry seemingly mixture is very good to consolidate and to plane. It is not jamming at tools.

Down-grade levelling courses are produced on flat roofs with Durocs 1120 and the same technique. These levelling courses of Durocs, sand or other mineralic aggregates is resistant against usual bituminous glue for roof sheetings and is fire-proofed.

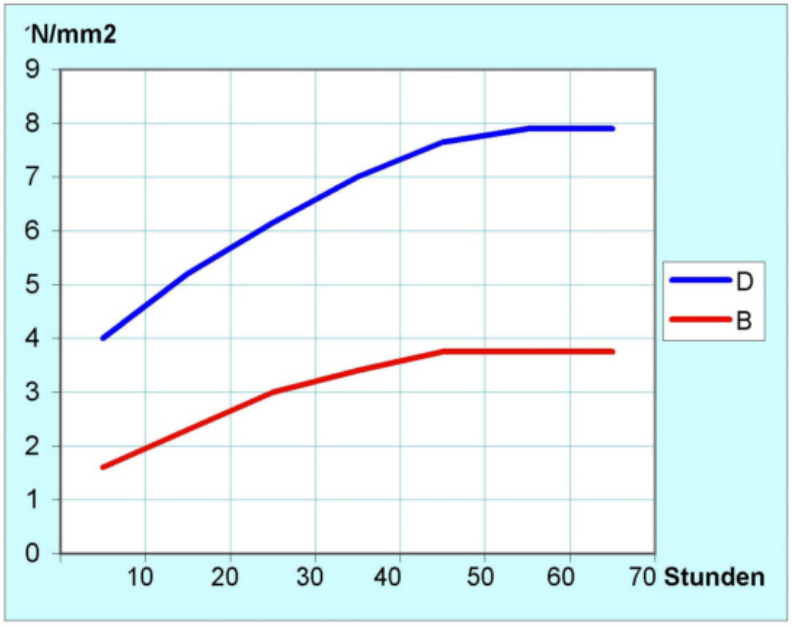
Special solutions in combination with screeds or levelling courses are possible, because of easy aggregates and Durocs 1120 as binding agent. They put only a humble pressure onto statics of buildings. Durocs 1120 is a real 1 component system.

It has a high setting speed, at low temperatures actually better than the setting speed of a lot of binding agents with resin and hardener component. Mortars of Durocs 1120 are applicable at temperatures <10°C. Accepted epoxy resines do not react acceptable at this temperatures.

Development of compressive strength and flexural-tensile strength of mixtures of dry glass sand 0,2 - 0,7 mm with 2% Durocs 1120. Measured at norm prisms 4 x 4 x16.

Compressive strength values ≥1,6 N/mm² are reached after already 1 hour.

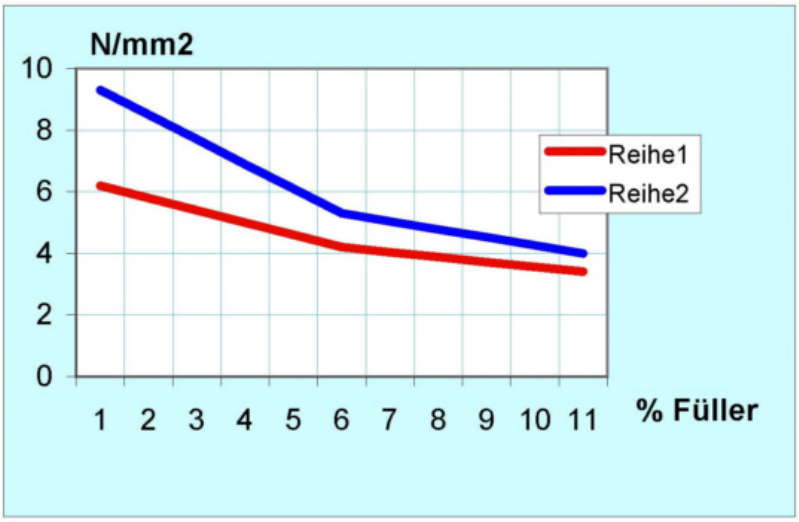
D = compressive strength
B = flexural-tensile strength



Development of compressive strength in dependence to content of extenders („fillers“) by mixtures of glass sand with 0,2 - 0,7 mm and 2% Durocs 1120.

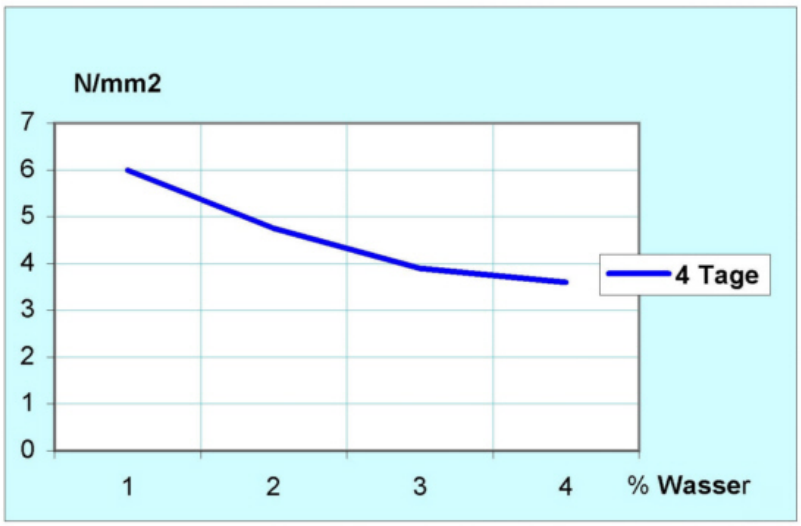
Extender containing sands reduce the compressive strength at equal binding agent content. The loss of resistance can be balanced with higher content of binding agent.

Row 1 - after 4 days
Row 2 - after 14 days



This chart shows the influence of water (in wet sand) to the development of compressive strength. Wet sands reduce the compressive strength compared to dry sand with 2 weight proportions of Durocs 1120.

The loss of resistance will be balanced by increasing the amount of binding agent.



Consumption

The binding agent Durocs will be delivered ready to use in different sizes of trading units. Mix it with dry sand, available on location.

With Durocs 1120/F, MCM delivers now special glass sand mixtures in very light colours, as well as coloured granite sand. Durocs binder is packaged (25 kg glass sand, 1 kg Durocs 1120 [4 %]), ready to use, together with sand in plastic hobbocks. After easy mixing, this first-class mortar is ready to use. Accurate, equal grading curves and quality of the used sands guarantee high resistance and optimal water permeability of the mortar.

Durocs 1120 /LE (light) is a light extender mixture, pre-dosed ready to mix, available on enquiry. It consists of grain fractions made of cellular glass and is ideal for fast setting, light and waterfree screeds for retrofit (volumetric weight below 500 kg/m^3 !).

Durocs 1120 mixed with sand.
Similar strength to concrete.

Average Material Consumption			
	Class	Breadth of joint mm	Consumption kg / m2
large pavement	1	8	4,5 - 5
	1	15	9
	2 / 3	15	9
small pavement	1	10	9,5
	1	10	10,5
mosaic pavement	5-7 cm	8	12
	3-5 cm	8	15

The material consumption for joints is depending on local conditions like breadth of the joint, form of the stones or the thickness of the layers (by plane coverings). the mentioned values are only standard values.

Safety Storage Waste

Durocs 1120 contains no toxic ingredients or volatile solvents. Avoid contact with the mucous membrane and do not swallow it. Allergic reactions after contact with the product are not known.

There are no special safety measures for employees necessary. We recommend provident to attend business hygienic preventive measures, as well as protections for the use of chemical building materials. Take further information from the safety datasheet for safe handling of Durocs 1120, created after EU / ECC norms and directives.

Clean tools and equipment directly after use mechanically, residue free. Usage of usual solvents (lacquer thinner) for the removal of fresh impurities is possible. Completly hardened Durocs is only hardly solvable and also hardly mechanical to remove.

Durocs 1120 is a organic substance. Therefore it is flammable but not combustible. There are no special requirements to storage rooms. Do not store it together with strong oxidising substances. Please close opened casks always immediately, Durocs 1120 is reacting with atmospheric oxygen.

Hardened Durocs 1120 and leavings of mortar, made of Durocs and sand, can be disposed as construction waste. Liquid product rests are hazardous waste. Regard local instructions for disposal.

Chemical Properties

Description	Durocs 1120
Consistence	Polymer with reactive groups
Odour	Weak, typical
Colour	Blue-purple up to brownish, transparent
Viscosity	850 +/- 200mPa.sek (20°C)
pH-value	Neutral
Density	About 0,9 - 0,95 gr/ml
Ignition temperature	≥ 300°C
VbF	Not applicable
Identification (ArbStoVo)	Not applicable
GGVS/GGVE	No transport restrictions
WGK (§ 19 WHG)	0 (not hazardous to water)
Poisonous category (Switzerland)	Not clasified (non-toxic)
VOC (Volatile organic compounds)	0 (contains no volatile organic materials)
Storage	Cool, protect of frost
Durability	12 month in tight closed casks

Mechnical Properties

The resistance of bodies made of Durocs 1120 and minerally aggregates is high. The resistance is appointed by grain consistence and by properties of used aggregates.The following mentioned values are appointed at norm prisms, made of dry glass sand (humidity below 2%) 0,02 - 1,2 mm with 2% weight proportion of Durocs 1120, as binding agent.

Density	About 1650 kg/m³
Compressive strength	About 14,2 N/mm² (after 3 days / 20°C)
Flexural-tensile strength	About 4,9 N/mm² (after 3 days / 20°C)
Elastic modulus	About 2,9 x 10^3 N/mm² (pressure test)
Tensile strength	About 2,0 N/mm² (DIN 53455/ after 3 days / 20°C)
Shear strength	About 1,3 N/mm² (after 3 days / 20°C without superimposed)

Recommended additives

Aquasolv 720 A highly efficient rinsing agent for cleaning of mixing machines and processing equipment, which is inert. It is an environmentally friendly safety solvent with very high flamming point. Aquasolv 720 is innocous, non-toxic and not harmful to health. There is no need for labelling and no transport restriction.

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