TOPIC SCHEDULE

LECTURE			*PRACTICAL*
week	**Date**	**Topics**	**Topics**
9.	21. IV.	Building materials and their applications: PLASTICS	

Today's Lecture: Building materials: Plastics in building constructions

Characteristic new materials of recent decades are plastics which rapidly played an important role in the construction industry. Plastics are organic high polymers, all of which are plastic at some stage of their manufacture.

Plastics fall into 2 large categories (must learn):

- thermoplastics (epoxy, polyesther, melamine, silicone)
- thermosetting (polyethylene, acrylics, polypropylene, nylon, teflonpolystyrene)

Thermoplastics can be softened by heating and hardened by cooling any number of times.
Thermosettings are originally soft or liquid, but upon heating they harden permanently.

Most plastics are modified with plasticizers, fillers, or other ingredients. Consequently each base material forms the nucleus for a large number of products having a wide variety of properties.

Plastics are used for:
Corrugates sheets, extruded profiles, paints, covers, translucent sheets for roof lights domes, thermal insulations, roofing felts: single unit roof coverings, damp proof course, carpets, curtains, caulking, coating, fixing: gluing, screwing, bolting, riveting, etc.

a) Physical Properties (must learn):

The physical properties of plastics vary greatly, there is no typical guide, some examples
- Styrofoams 30-120 kg/m3
- Solid plastics 850-1400 kg/m3

Plastics tend to be damaged by sunlight and will not be very resistant to high temperatures, may release dangerous gases when burnt. Plastics in the building industry tend to be low heat transmission materials. A major disadvantage is that a great number of products have no real history to rely on and account for.

b) Plastic aplications (must learn):

1. Water insulation
Traditionally asphalt and bituminous products were and still are applied due to their water-resistant properties as damp proof course or as roof felts (fixed mainly by bitumen adhesive) .The core of the felt can be paper or glass fibre. PVC and other plastic products have now flooded the market and are reliable competition to bitumen products.

2. Drain systems
Surface drain systems function as a water collecting surface both for separation and for load transmission.

3. Thermal insulations
Expanded and extruded PS materials are widely used both internally, externally below as well as above ground level.

3. Pipes, Window frames, other profiles and plastic products
Typically PVC profiling, but other materials are widely used as well such as paints and decorations.

c) Types of plastics:

Classifications vary:
on polymer basis on physical characteristics as brand names

polyvinyl chloride
polyethylene
acrilics
silicones
polyurethanes

thermoplastic
thermoset
elastomer
engineering

rayon (celluloid)
bakelite (phenolic)
polystyrene (PS) polyvinyl chloride (PVC)
syntethic rubber etc.

REFRENCES:

as extruded profiles for windowe, and doors, etc. They are also used as louvres, brise-soleils or ornamental grids.

Characteristic new materials of recent decades are plastics which rapidely played an important role in the construction industry. Plastics are organic high polymers, all of which are plastic at some stage of their manufacture. Plastics fall into 2 large categories:

- thermoplastics /epoxy, polyesther, melamine, silicone,/
- thermosetting /polyethylene, acrylics, polypropylene, nylon, teflon-polystyrene/
- Thermoplastics can be softened by heating and hardened by cooling any number of times.

Thermosettin: originally soft or liquid, but upon heating they harden permanently. Most plastics are modified with plasticizers, fillers, or other ingredients. Consequently each base material forms the nucleus for a large number of products having a wide variety of properties.

Some of them:

Cellulose derivates cell. acetate, cell. nitrate

High pressure laminates / for sheets and tubes/ resistant to alcohol, water and solvents.

Synthetic rubbers butyl /gaskets, lowest gas permeability/ neoprene nitril /oil resistant/, silicon rubber /for gaskets/, sulphide rubber /resistant to solvents/, laminated rubber /with textiles fabrics, filaments, metal wire for belts, linings, hose, vibration insulators/

mastic sealers of calcing compounds /good adhesion, good cohesive strength, elasticity, no-staining/

Oxidized oil /have a tendency to continue to oxidize or"body"/to thichen/

there are: - slow drying
- fast drying

consistancies: knife consistency
hand or tool consistency
gun consistency
paddle or spray

coatings: oil paints, - water, - calcimine, -varnish, - enamel, - lacquer, - japan /opaque/, - shellac, - aluminium paint.

Plastics are used for:

- corrugates sheets
- extruded profiles
- paints
- covers
- translucent sheets for rooflights domes
- roofing felts: single unit roof coverings
- damp proof courses
- carpets, curtains

caulking
coating
with a large variety of
fixing:
- glueing
- screwing
- bolting
- riveting, etc.

Asphalt and bitumenous products are applied where on can make use of their water-reistant properties:

- as damp proof courses
- roof felts /fixed mainly by bitumen adhesive/

/The core of the felt can be paper or glass wool./

Glass has been in use for a long since, and has been prevalent since the late Middle Ages. Primarily used as transparents sheets in windows, roof-lights, but also as semi-translucent sheets and blocks and as reinforcing f

Classification of glasses:

- clear
- tinted
- obscure
- translucent
- heat reflecting

- wired
- bullet proof
- cladding
- glass block D 56
- profile D 56

- factory sealed twin D5

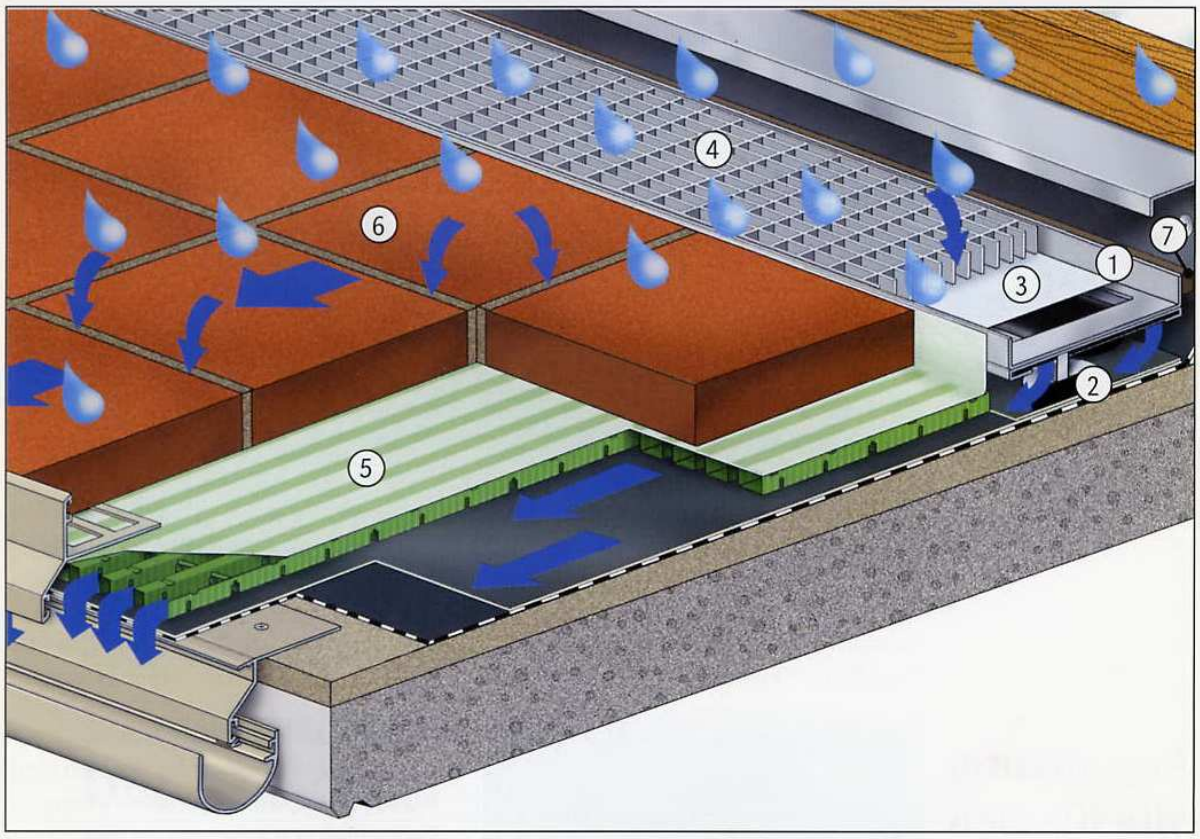
- sheet
- plate
- armour

- cast
- rolled
- figured
- reeded
- cathedral

AquaDrain® DR

die Lösung bei loser Verlegung

Sie können direkt verlegen – oder indirekt mit Ausgleichsschicht
Sowohl bei der direkten als auch indirekten Verlegung können Sie mit AquaDrain DR wertvolle Zentimeter gewinnen und Türanschlußhöhen entscheidend reduzieren.

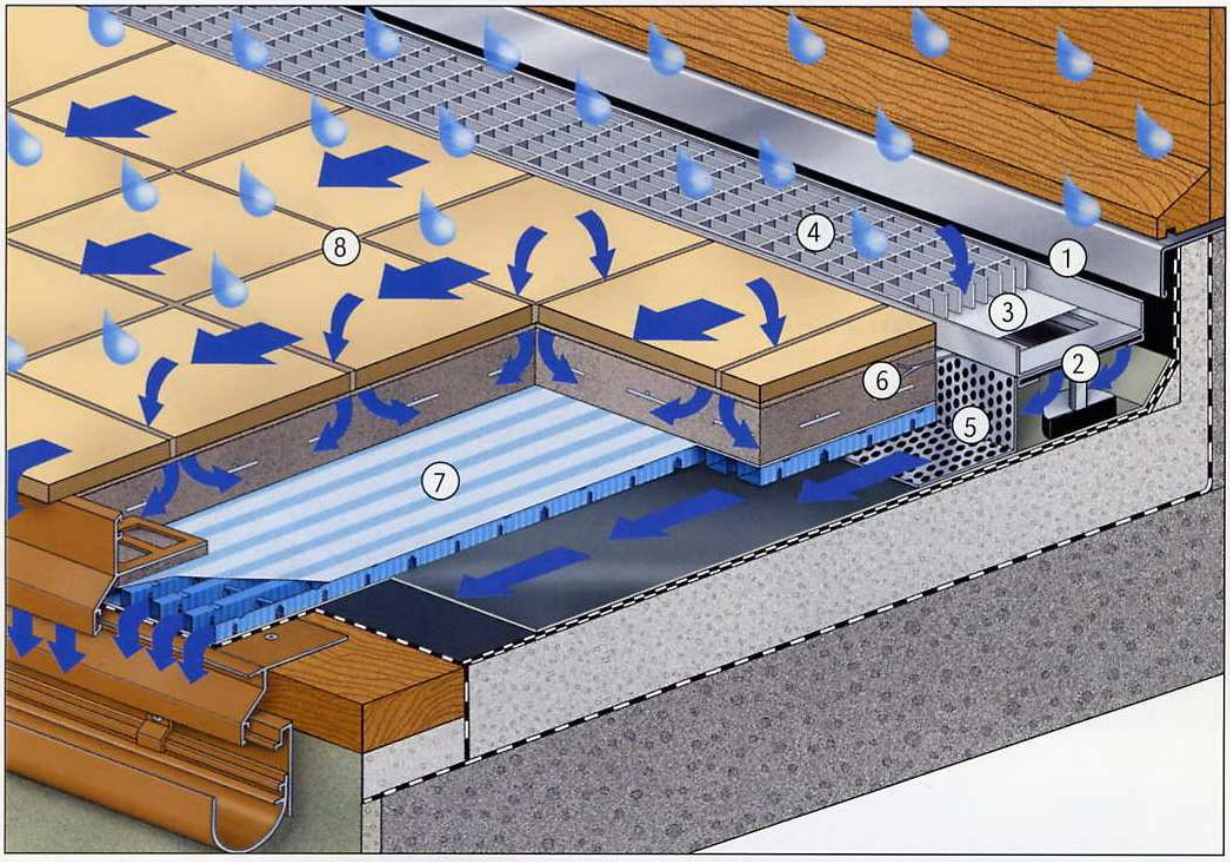


AquaDrain DR Drainrost ① - ④
bestehend aus:
① **Rahmen feuerverzinkt**
② **stufenlos höhenverstellbare Füße**
③ **Schmutzfilter**
④ **Gitterrost-Auflage**
⑤ **AquaDrain T+ Drainrolle**
⑥ **Belag**
⑦ **AquaDrain SL Fugenband**

AquaDrain® DR

die Lösung bei fester Verlegung

AquaDrain DR ist die technisch durchdachte Lösung für die feste Verlegung. Der AquaDrain DR Drainrost für festverlegte Beläge hat zwei drehbare, stufenlos höhenverstellbare gummikaschierte Füße sowie zwei zusätzliche Mörtelanker. Damit ist er speziell für Wand- und Türanschlüsse oder die Linienentwässerung von festverlegten Balkon- und Terrassenbelägen geeignet. Schmale, unauffällige Ausführung, Standardbreite 100 mm, drei Standardlängen.



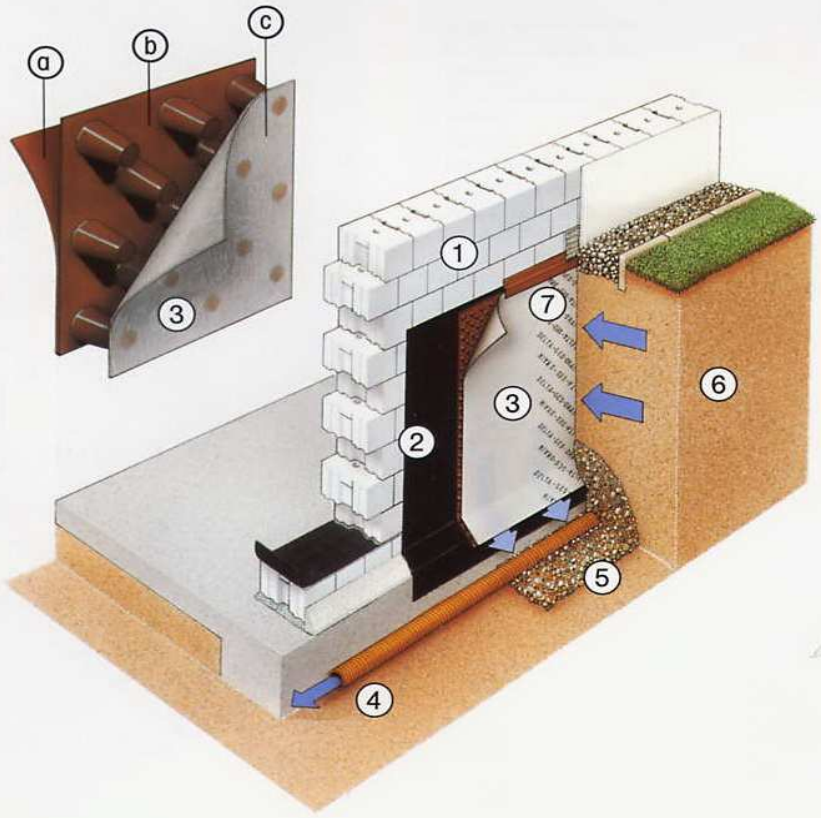
AquaDrain DR Drainrost ① - ④ bestehend aus:

① Rahmen feuerverzinkt
② stufenlos höhenverstellbare Füße
③ Schmutzfilter
④ Gitterrost-Auflage
⑤ AquaDrain Lochwinkel
⑥ AquaDrain Mörtelanker zum Fixieren des Drainrostes im Estrich
⑦ AquaDrain FE+ Drainrolle
⑧ Belag

DELTA-GEO-DRAIN dimpled sheeting also offers a solution to another problem: more and more frequently thick, soft elastic coating is used for the waterproofing of structures. On the one hand they are very reliable in bridging over cracks, but on the other hand they are very susceptible to damage and cannot be point-loaded in the long term. **DELTA-GEO-DRAIN** acts as a protection and drainage system which can be laid in one operation, especially for use with thick coating but also with the waterproofing of structures with plastic membranes. **DELTA-GEO-DRAIN** reaches the same values as **DELTA-GEO-DRAIN TP** regarding compressive strength and water conductive capacity. However, **DELTA-GEO-DRAIN** has in addition a slip-layer membrane spot welded to the rear. This prevents a displacement and damage to the thick coating in the event of settlement of the backfill. If there is an intensive connection to the thick coating, it also acts as an additional waterproofing membrane.

The DELTA-GEO-DRAIN protection and drainage system is laid in rolls with the smooth side (slip-layer membrane) facing the brickwork and the applied geotextile facing the soil.

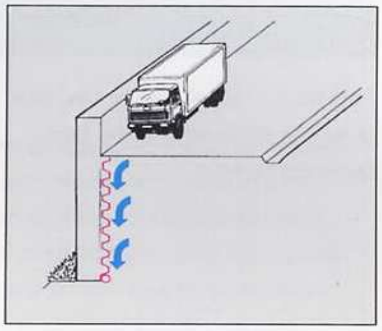
DELTA-GEO-DRAIN is a single erection element of three components bonded together in the factory: slip-layer membrane, dimpled sheeting, and geotextile durable filter.

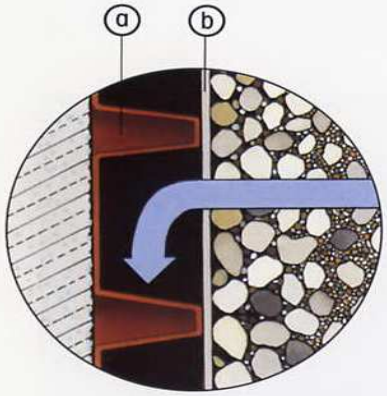


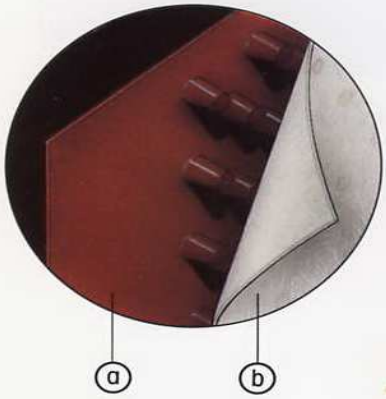
① basement brickwork
② thick bitumen coating
③ sandwich layer of DELTA-GEO-DRAIN consisting of:
ⓐ separation and slip-layer membrane
ⓑ dimpled sheeting
ⓒ geotextile
④ drainpipe
⑤ gravel
⑥ backfill
⑦ DELTA-MS profile

Compact System Solution for High Water Occurrance and Thick Coating

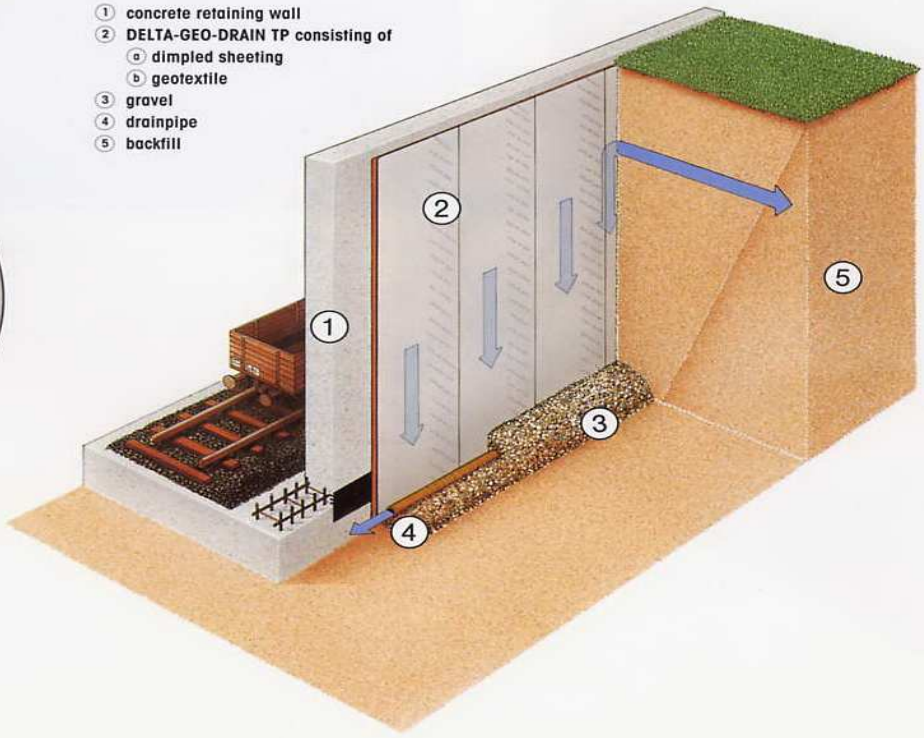
In civil engineering projects and underground constructions, such as retaining walls, bridge abutments, tunnels, and roof slabs covered with earth, a high volume of water and high loadings are usually to be expected, as a result of the earth and formwork pressure. In those cases where the drainage capacity and compressive strength of **DELTA-DRAIN** is not sufficient, the use of **DELTA-GEO-DRAIN TP** is recommended. Because of the special structure of its studs, **DELTA-GEO-DRAIN TP** has almost four times the compressive strength of **DELTA-DRAIN** and can be used at greater depths of up to 10 m and with extremely high formwork pressures (see the diagram on page 17). The studs, which are laid against the earth, function as a complete and highly effective drainage layer - in comparison to **DELTA-DRAIN** with nearly three times the drainage capacity - which can also cope with high water volume. The welded on geotextile filters small particles out of the seepage water and prevents blocking of the drainage channels. This effect is also of use with two-layer constructions, for example when basement walls are concreted against timber excavation linings. **DELTA-GEO-DRAIN TP** is built in with the geotextile against the timber in order to prevent sediment getting into the drainage as a result of voids in the planking or of subsequent rotting of the timber.





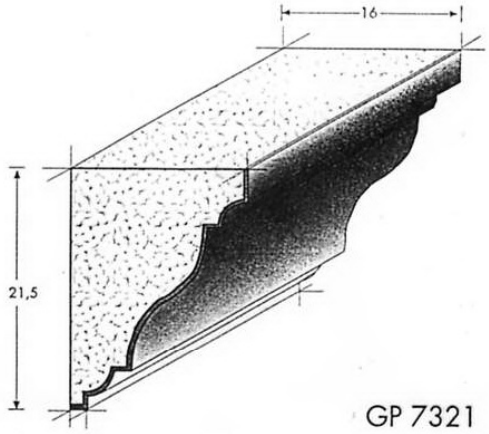


1 concrete retaining wall
2 DELTA-GEO-DRAIN TP consisting of
a dimpled sheeting
b geotextile
3 gravel
4 drainpipe
5 backfill

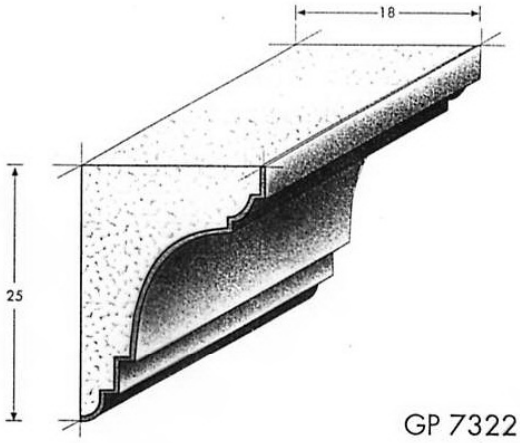


CALALIT®
FASSADENPROFILE

Traufgesimsprofile (Maßangaben in cm)



GP 7321



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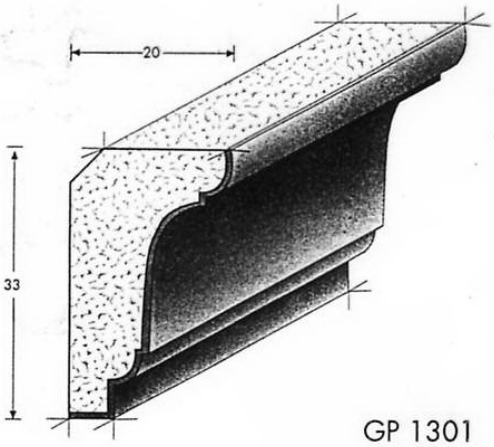
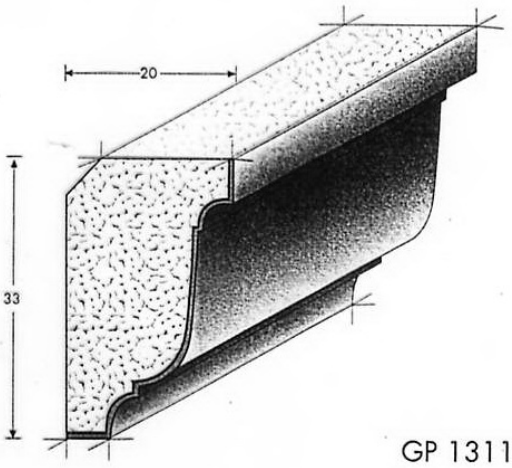
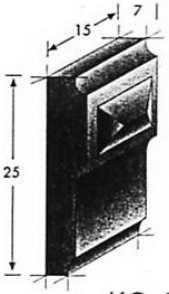


GP 1301



GP 1311

Konsolen



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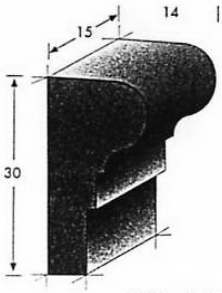

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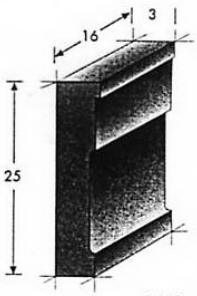

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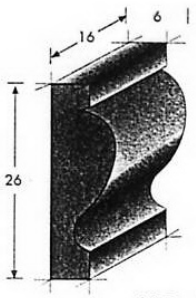

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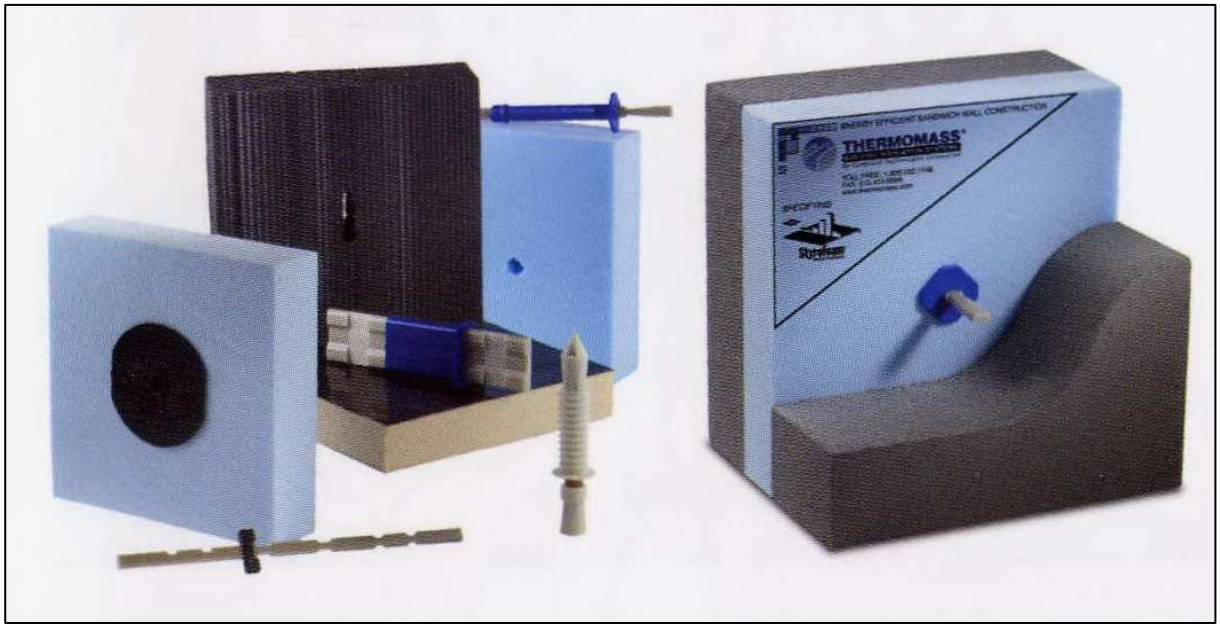
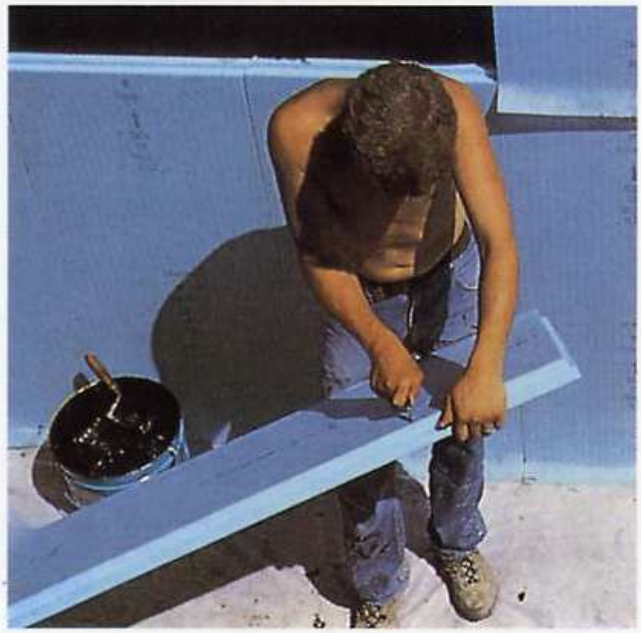

THERMOMASS

A Styrofoam Plan további termékei:

FLOORMATE* 200, 500, 700
– különböző terhelésű padlók, parkolófödémek, utak vasutak hőszigetelése
ROOFMATE* SL
– fordított rétegrendű lapostetők, teraszok, tetőkertek hőszigetelése
ROOFMATE* LG
– könnyű leterhelésű fordított rétegrendű lapostetők hőszigetelése
ROOFMATE* TG
– magastetők hőszigetelése
DECKMATE* CM
– egyenes rétegrendű könnyűszerkezetű kis hajlású tetők hőszigetelése
STYROFOAM* IB
– lábazatok, hőhidak, koszorúk, oldalfalak, árkádfödémek hőszigetelése



DOW

Dow Hungary

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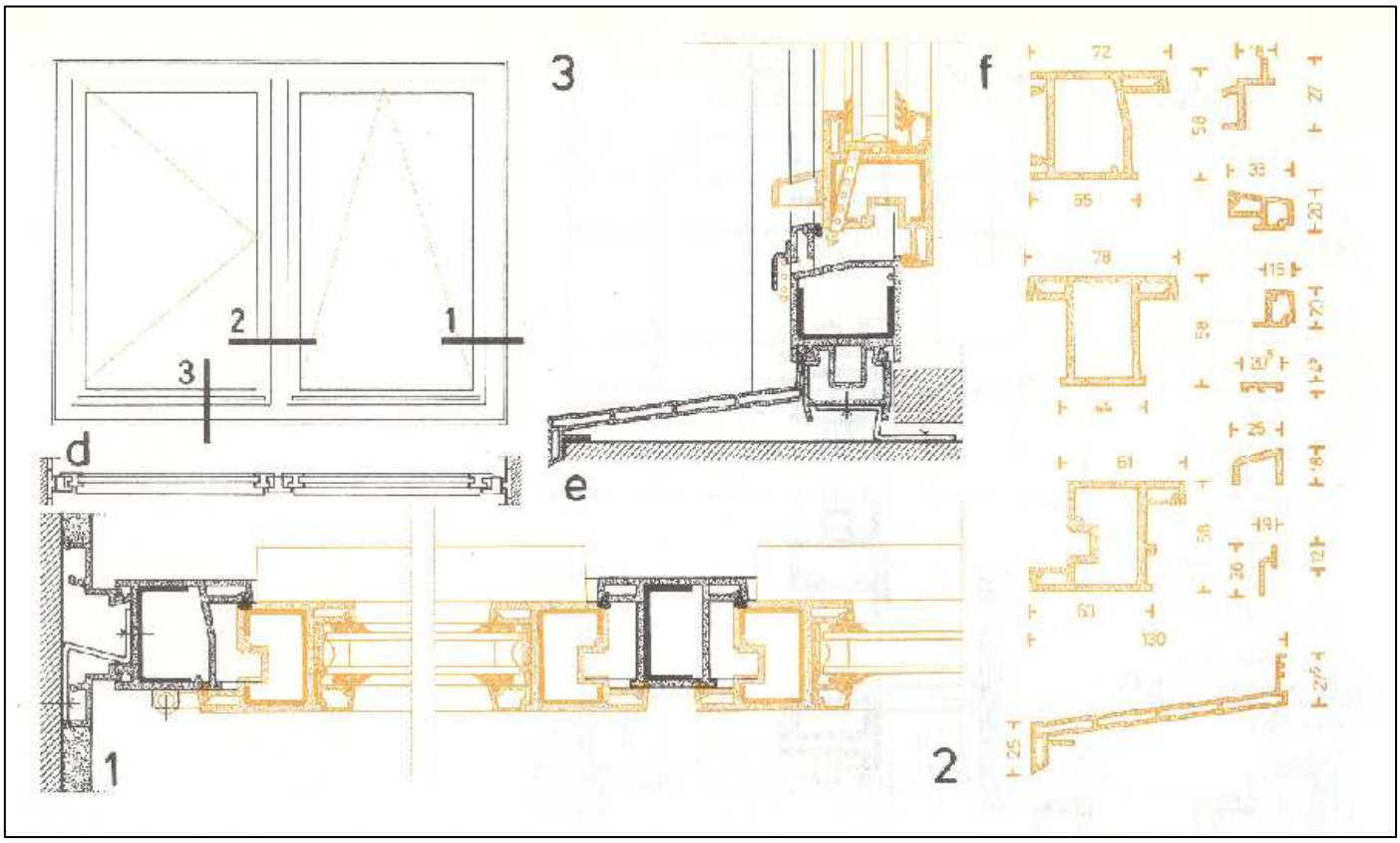
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