POLYURETHANE ELASTOMERS

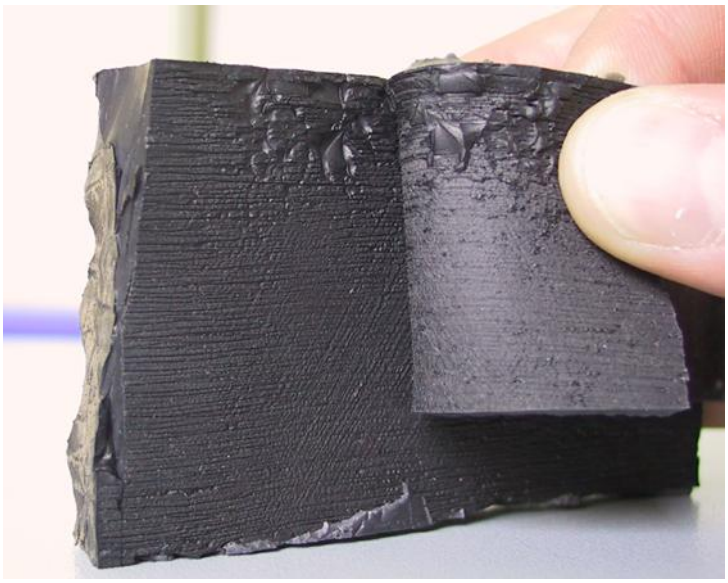
Chester Molecular offers a full assortment of elastomers for various applications in two basic forms: thixotrophy (firm, soft paste) and liquid with the hardnesses from 75 ^{o} to 95 ^{o} Shore.

16a/Rubber surface preparation

The surface should be cleaned of oils, lubricants and fats using Chester Fast Cleaner F-7.

Another operation is to roughen the surface.
This is supposed to "develop" contact surface with the elastomer and hence increase the total adhesion force.

The most appropriate way of obtaining a relevant surface preparation is the use of a drill equipped with a rigid wire mesh or a disc with thick abrasive paper.



16b/Metal surface preparation

The metal surface onto which elastomer Chester Molecular will be applied must be adequately prepared and subjected to appropriate treatments in the same way as it is in the case of composites.

This means that, must be cleaned of dirt, pre-washed, roughened by means of stream-abrasive method /sandblasting, shot blasting, balling /or by means of other methods used before applying composites.

The proper preparation of the surface has a crucial impact on the parameters of the performed application.

Surface preparation is intended to clean it and then assign it appropriate geometrical structure - roughness.

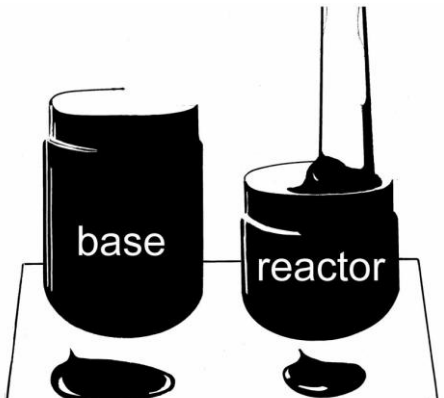
For elastomers Chester Molecular the most recommended profile is fine-grained G according to ISO 8503-2 R_{y5} 30-60 μm.

Pay attention that the used abrasive is not contaminated with salts.

17/ Mixing

Elastomers are delivered in sets consisting of two different size containers in which there are components marked accordingly Base and Reactor.

To obtain a material ready for application, connect and thoroughly, at least one to two minutes, mix both the components and then deareate.



The set after opening the packaging must be mixed and used fully and at once.

Mixing the entire is made in a larger container from the set, after prior putting the content of a smaller container to it.

The above is not applicable for Chester Elastomer 80TR.

Mixing the product should proceed outside the packaging, on a flat clean dry surface e.g. on a rigid film.

Since Base and Reactor have various colours,it is easy to optically assess mixing accuracy.

The material is mixed correctly when the entire prepared substance has a uniform color and there are no streaks.

During mixing air bubbles get into the material.

This will result in porosity and weaker strength parameters.

That is why it is very important to remove the air.

It is performed by rubbing in thin layers the mixed material on a flat, clean, dry surface.

It can be done also in the course of application if the shape of the surface enables it.

18/ Application

The material may be applied after making sure that it is well mixed, the surface is adequately prepared, the ambient temperature is higher than 10^{o}C and the relative humidity is lower than 85%.

The application is most comfortable to be conducted with the use of company blades and spatulas.

They are adequately flexible and the type of material and their smoothness prevent the adhesion of the distributed material.

Fluidized materials may also be applied with a stiff brush with short bristle.

During the application, remember to thoroughly rub the material into the base and remove the air bubbles.

Bear in mind the fact that polymerization begins immediately after mixing the base and the reacting agent.

In the Technical Data Sheets for each product a parameter is specified ***"Maximum time of suitability after mixing (20^{o} C)"***.

This is time counted from the combination of both components of the product until the moment when the hardening is so advanced that the product's application is inadvisable or very difficult.

This time is prolonged at lower temperatures and shortened in higher.

Extension of the time of suitability can be achieved by spreading the mixed elastomer in a thin layer on a piece of clean dry film or sheet.

19/Repair of belt conveyors

Damage has the nature of losses and cracks, often in the shape of long ten to twenty-metre furrows.

The places intended for repair should be thoroughly cleaned and degreased, preferably with Fast Cleaner F-7.

Then they should be roughened using a special brush.

The direction of roughening may be any kind – traces left by the brush may be parallel to the longitudinal axis of the tape.

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In the case of longitudinal crossing of the tape use the so-called sewing.

It consists in the application of metal fixed adaptors (screwed, riveted, bent etc.) perpendicularly to the direction of the damage.

The next operation is application of a priming agent Chester EL 20M.

After approx. 30 minutes (in 20^{o} C), one can start applying elastomer.

Elastomer hardness should be selected taking account of the hardness of the conveyor's rubber.

Predominantly, it will be Chester Elastomer 75F (liquid, hardness 75 ^{o} ShA).

The application is most comfortable to be conducted with the use of company blades and spatulas.

They are adequately flexible and the type of material and their smoothness prevent the adhesion of the distributed material.

Fluidized materials may also be applied with a stiff brush with short bristle.

During the application, remember to thoroughly rub the material into the base and remove the air bubbles.

When repairing damaged borders (edges) of the tapes it is purposeful to make a relevant shuttering.

It is advised to apply reinforcement of a reinforcing tape Chester.

Bear in mind the fact that polymerization begins immediately after mixing the base and the reacting agent.

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This time is prolonged at lower temperatures and shortened in higher.

Extension of the time of suitability can be achieved by spreading the mixed elastomer in a thin layer on a piece of clean dry film or steel sheet.

The repaired in this way conveyor can be put into operation after approx. 36 hours.

Full mechanical strength is obtained after approx. 48 hrs.

Application cannot be conducted at a temperature lower than 10 ^{o} C or relative air humidity greater than 85% and in conditions in which the condensation of moisture takes place of the repaired surface.

20/Repair of rollers and rubber shafts

Damage to the surface of gummed surfaces have the form of circumferential grooves or cracks.

The area of damage should be cleaned, degreased with Fast Cleaner F-7 and roughened with a special brush.

The next operation is application of a priming agent Chester EL 20M.

After drying the surface up, i.e. after approx. 30 minutes in 20 ^{o} C, start applying the thoroughly mixed and deaerated elastomer.

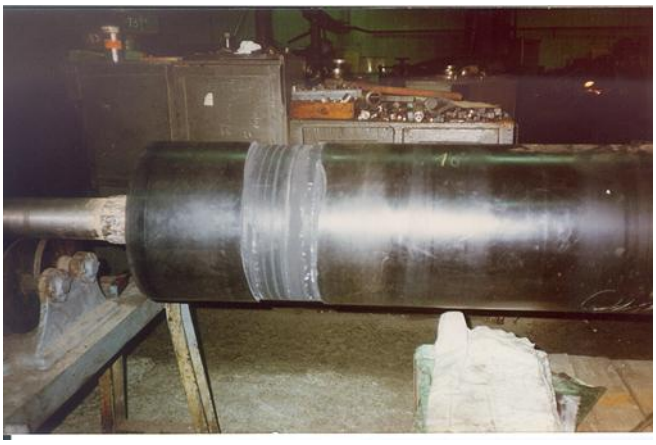
In this type of repair it is easiest to apply thixotropic elastomer with hardness similar to drum hardness.

Elastomer should be thoroughly rubbed in the base supplementing rubber loss to the actual lining thickness.

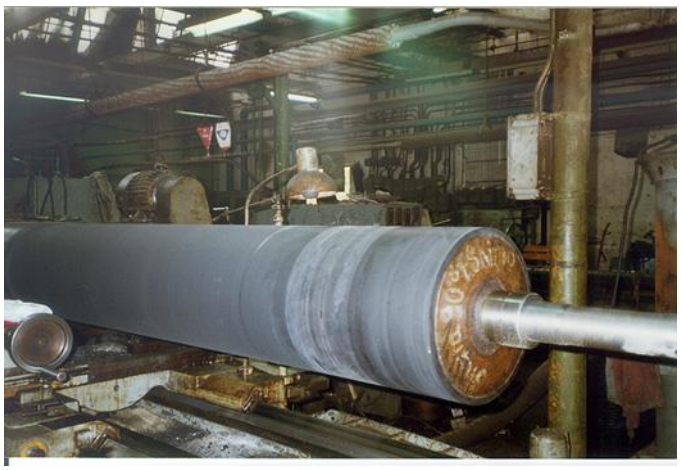
The last thing is smoothening elastomer surface with a spatula.

The repaired drum can be put into operation after approx. 24 hours (in 20 ^{o} C).

Rubber roller



Shaft gummed before, in the course of applying elastomer and after regeneration



21/Protection of bodies and of pumps ' rotors

As a result of liquid flow in the pumps there is wear as a result of cavitation, erosion and chemical action of a working factor.

This results in expansion of play between the rotor and the body, clear losses in the shape of the rotor and the body, which is reflected in the reduction in pump efficiency.

To protect the pump against erosive wear it is possible to cover the internal working surfaces of the pump with an elastomer layer.

Elastomer is used both for repair of damaged gummed surface and to protect metal surfaces, factory not protected or protected with ceramic materials.

Damaged gummed surfaces (cracks, narrowing) should be cleaned, degreased with Fast Cleaner F-7 and roughen with a special brush.

The next operation is application of a priming agent Chester EL 20M.

After drying the surface up, i.e. after approx. 30 minutes in 20 ^{o} C apply a thoroughly mixed and deaerated elastomer.

Elastomer should be thoroughly rubbed in the base supplementing rubber loss to the original coating thickness.

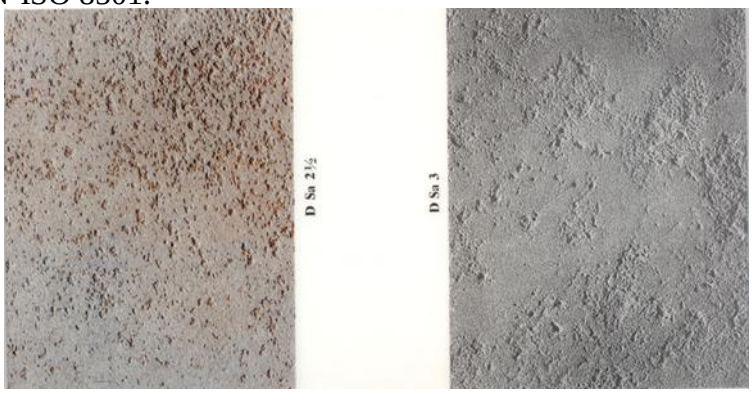
For the application, select elastomer with hardness similar to the hardness of the existing coating.

Metal surfaces intended for protection should be cleaned and degreased with Fast Cleaner F-7.

The next stage is roughness of the surface.

The recommended method of cleaning and giving appropriate roughness is the abrasive method.

The condition of the surface after cleaning must correspond to Sa 2 ½ or Sa 3 according to standard PN-ISO 8501.



Then apply a primer Chester EL 10M.

After drying the surface up, i.e. after approx. 30 minutes in 20 ^{o} C, start applying the thoroughly mixed and deaerated elastomer.

Elastomer should be thoroughly rubbed in the base applying it to the assumed coating thickness, most often in several layers.

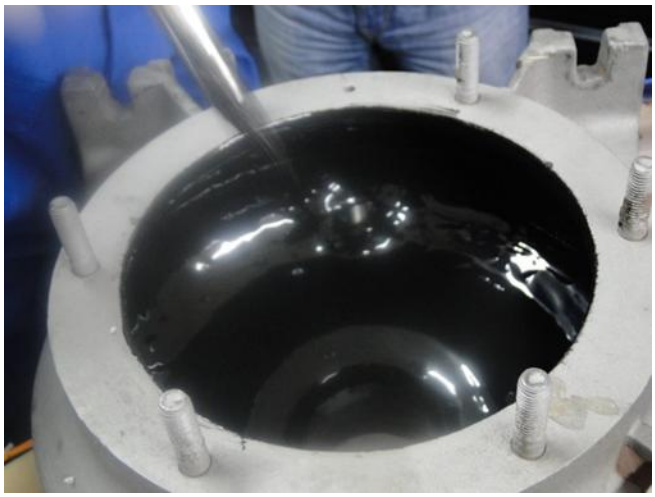
In most cases, the durability of the applied coating is directly proportional to its thickness.

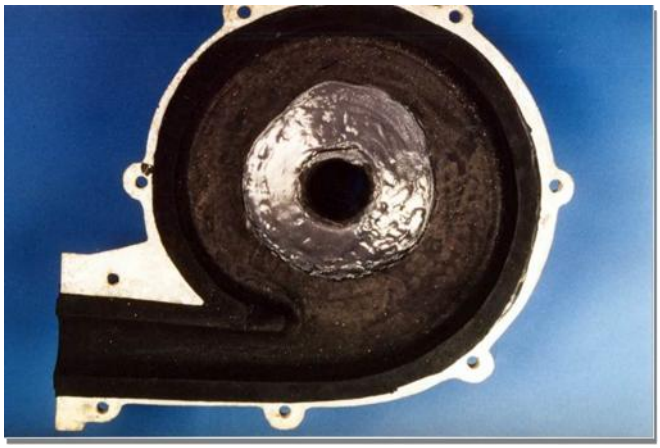
In practice, in small pumps coating thickness should not be less than 1.0-1.5 mm.

In pumps of big dimensions and where extremely high erosion is present , layers of 4-8 mm are applied, of course if it is technically possible.

The repaired pumps can be put into operation after approx. 24 hours (in 20 ^{o} C).

Reconstruction of the pump body for transportation of concrete.





Reconstruction of rotors

2 2/Tightening machines /e.g.generators/

Leaks on division surfaces can be emergency (without dismantling of machines, devices) eliminated using Chester elastomers applying them on perpendicular surfaces to the contact surface, namely the structural sealing surface.

In a similar manner it is possible to tighten the covers, caps and all places of connection of elements of machines.

The elastomer is applied at the contact of two elements in a way covering the contact line.

The described actions have a typical nature for temporary repair intended to remove failure as quickly as possible.

The surfaces intended for application must be clean, degreased and roughened.
Washing and degreasing are performed with Fast Cleaner F-7.
To provide appropriate roughness, due to most often small area, use a disc cutter or similar tools.

The next operation is applying a priming agent Chester EL 10M.

After drying the surface up, i.e. after approx. 30 minutes in 20 ^{o} C it is possible to apply a thoroughly mixed and deaerated elastomer.

It is recommended to apply it symmetrically in respect of the division line in the strip with the width of 40-50 mm and layer thickness 3-4 mm.

In this type of applications use thixotropic elastomer with the hard of 75 or 85 ^{o} Sha.