

COLTECH E 4020

TECHNICAL DATA SHEET
Date: 01.05.2019 – Version 19

Polyurethane Elastomer Resin

Product description

COLTECH E 4020 is a two component, solvent free, low modulus, polyurethane elastomer. It provides excellent elasticity and high tear resistance properties with minimum shrinkage.

Cures by reaction (cross linking) of the two components even at very low temperatures.

Uses

The COLTECH E 4020 is a specialized elastomeric resin for:

- production of molds for use in concrete and gypsum objects production.
- production of molds for use in resin objects production.
- production of soft-elastic objects.
- filling / casting applications.

Advantages

- Solvent free
- Shore A 20
- Cold curing
- Minimum shrinkage
- High tear strength
- High impact strength
- Chemical resistant
- Over 10 years of positive feedback worldwide.

Consumption

1,0 kg / liter

Colors

The COLTECH E 4020 is supplied in yellowish-transparent. Other colors may be supplied on demand.

Technical Data *

PROPERTY	RESULTS	TEST METHOD
Composition	Polyurethane Resin + Hardener. Solvent free.	
Mixing Ratio (A : B)	100 : 100 by weight, 100 : 100 by volume	
Hardness (Shore A Scale)	20 + 3	ASTM D 2240
Density (A+B)	1,02 gr/ml	ASTM D 1475
Shrinkage	<0,5%	IN HOUSE LAB
Solids Content	100 %	CALCULATED
Elongation at break	1000 %	ASTM D 412
Tensile strength at break	4,30 MPa	ASTM D 412
E-modulus	0,6 MPa = Low modulus	ASTM D 412
Temperature strength	60-65°C (Fully cured)	IN HOUSE LAB
Low Temperature Brittleness	-40° C (Fully cured)	IN HOUSE LAB
Pot Life	15 minutes	Conditions:20°C,50%RH
Tack Free Time	3-4 hours	
Demolding Time	24-36 hours	
Final Curing time	7 days	

Chemical Properties

Water	+	Hydrochloric acid 5%	+
Potassium hydroxide 5%	+	Styrene	±
Sodium hydroxide 5%	+	Sulfuric acid 5%	+
Salt water 20%	+	Xylene	±
Domestic Detergents	+	DMSO	-
Diesel oil	+	N-Methyl pyrrolidone	-

{+ stable, - unstable, ± stable for a short period.}

Application

Preparation of Prototype Object

Before casting, check that the surface or object to be copied (creation of mold) is free of any trace of moisture (Maximum surface moisture content should not exceed 4%). Moist gypsum and clay prototype objects need to be placed in an oven, to remove all humidity.

If the object to be copied is porous (clay, gypsum, concrete, wood, etc.), it needs to be pretreated by sealing all pores with the COLTECH E 495 resin/varnish. Depending on the porosity of the surface/object a second layer of the COLTECH E 495 resin/varnish might be needed.

Before the application of the COLTECH E 4020, the prepared object has to be coated with a suitable liquid-applied mold release agent as the COLTECH E 499 / E498 to avoid bonding with the prototype object.

Casting of Mold

Mixing

Stir COLTECH E 4020 Component A well before using. Stir COLTECH E 4020 Component B well before using.

COLTECH E 4020 Component A and Component B should be mixed by low speed mechanical stirrer, according to the indicated mixing ratio in this technical data sheet, for about 2 min. The mixing of the components has to be affected very thoroughly, especially on the walls and bottom of the pail, until the mixture becomes fully homogeneous. After the initial mixing of the two components, transfer the mixture into a clean container and mix again for 1min, in order to make sure that the components have been mixed thoroughly.

Apply COLTECH E 4020 resin with a brush on the surface/object to be copied, to avoid entrapped air pockets. After 15-30 min create the mold by filling up with COLTECH E4020 resin.

RECOMMENDATION: Use a suitable sized vacuum apparatus (-1 bar), to remove entrapped air bubbles from the COLTECH E 4020 A+B mixture, directly after mixing and before casting.

ATTENTION: Please ensure consumption within the Pot Life. COLTECH E 4020 (Component A and Component B) have to be stored and used at a temperature higher than 15°C. If the Component B is stored at a temperature <10°C it will freeze, but can be returned to a liquid state, by slowly warming it up in a 40oC heat chamber or by wrapping the pail with a heating blanket of 40oC.

Use of the Mold

When the mold, created out of the COLTECH E 4020 resin, is to be used for gypsum/concrete objects production, please ensure that the mold is fully coated on the inside with the COLTECH E 498 liquid-applied mold release agent, in order for the parts to be removed easily.

When the mold is to be used for resin objects production, please ensure that the mold is fully coated on the inside with the COLTECH E 499 liquid-applied mold release agent, in order for the parts to be removed easily.

Packaging

Pails should be stored in dry and cool rooms for up to 9 months. Protect the material against moisture and direct sunlight. Storage temperature: 15^o-30^oC. Products should remain in their original, unopened containers, bearing the manufacturers name, product designation, batch number and application precaution labels.

Safety measures

Contains Isocyanates. Please study the Material Safety Data Sheet. **PROFESSIONAL USE ONLY**

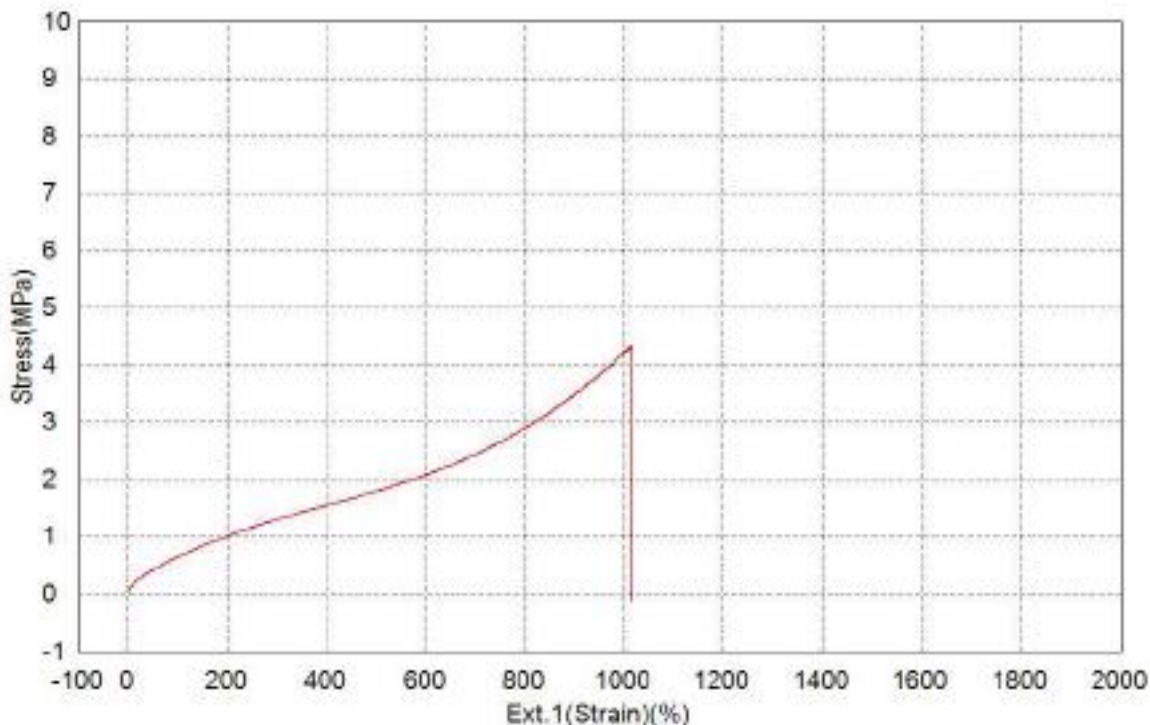
Tensile Test of Rubber

ASTM D412-06a

No.of Standard	ASTM D412-06a	Product Name	
Test File Name		Report Date	2019/10/11
Test Date	2019/10/11	Test Type	Tensile
Speed	500mm/min	No of Batches:	1
Qty/Batch:	1		

Name	Thickness	Width	Gauge_Length
Unit	mm	mm	mm
E 4020	3,06	6,00	250,0

Name	Max Elongation	Tensile strength
Parameters	Calc. at Entire Ar	Calc. at Entire Areas
Unit	%	MPa
E 4020	1015,60	4,32885
Median	1015,60	4,32885



Our technical advice for use, whether verbal, written or in tests, is given in good faith and reflect the current level of knowledge and experience with our products. When using our products, a detailed object-related and qualified inspection is required in each individual case in order to determine whether the product and /or application technology in question meets the specific requirements and purposes. We are liable only for our products being free from faults; correct application of our products therefore falls entirely within your scope of liability and responsibility. We will, of course, provide products of consistent quality within the scope of our General Conditions of Sale and Delivery. Users are responsible for complying with local legislation and for obtaining any required approvals or authorizations. Values in this technical data sheet are given as examples and may not be regarded as specifications. For product specifications contact our R+D department. The new edition of the technical data sheet supersedes the previous technical information and renders it invalid. It is therefore necessary that you always have to hand the current code of practice.