Test-Order chainflex®

Test No.: **4345**

Test Intention:
In test 4345 we want to investigate the lifespan of CFROBOT8.060 for torsion applications with a motion of ±180°.

Client:		
Name: Christian Mittelstedt	Team: chainflex®	Date: 24.01.2012

Order-Info:	
Customer/ No.: igus® GmbH, Spicher Str.1a, 51147 Köln	
Series / No: CFROBOT8	Installation type: Torsion, ±180°
Customer test: Yes ☐ No ☒	Development test: Yes ☒ No ☐

Technical data		**Target & Examination**	
E-Chain type:	TRC.100.145.0	Optical check:	☒
E-Chain Radius/length [mm]:	±180°	Resistance:	☐
Cable length [m]:	10,0	Function check:	☒
Ambient temperature [°C]:	approx. 25°C	Target [cycles]:	**Lifespan**

Experimental setup (Sketch, Photo ...)

Checklist for the experimental preparations

☒ additional inscription/label at all wires
☒ strain reliefs at both ends of the chain
☒ correct electrical connection of all wires
☒ radius was marked at the cables and the energy chain

1. Construction:

This test is built up on the „Drei-Ketten-Torsion“. The following pictures show the test structure:

2. Cable and hose packages:

No. 1: **2x CFRBOT8.060** with the cable marking
01553m igus CHAINFLEX CFROBOT8.060 (2x2xAWG22)C E310776 AU AWM Style 20963 80°C 30V CE E N/EJ PROFINET conform RoHS conform www.igus.de

3. Description of the cable construction:

Standard igus chainflex® catalogue cable

4. Remarks:

The CFROBOT8.060 was ready made with MAT90444697; we will check the electrical parameters regularly with the Fluke DTX-ELT Analyzer.

The following chart gives an overview regarding the test parameters:

Cable no.	Cable type	E-chain radius [mm]	Outer diameter [mm]	Bending factor catalogue
1.1	CFROBOT8.060	145	7,6	10,0
1.2	CFROBOT8.060	145	7,6	10,0

Cable no.	Cable type	Counter reading		Effectively tested cycles	Cable okay after … cycles
		… mounting	… demounting		
1.1	CFROBOT8.060	31.965.702	37.723.425	5.757.723	5.520.483
1.2	CFROBOT8.060	31.965.702	37.486.185	5.520.483	5.009.476

Test-order was checked by … [Rainer Rössel or Martin Göllner and further employee]

Date:	24.01.2012	Name:		Name:	Ch. Mittelstedt

Result

Start report 09.02.2012:
At the 09.02.2012 we started the test 4345 with a counter reading 31.965.702; we will measure the function regularly.

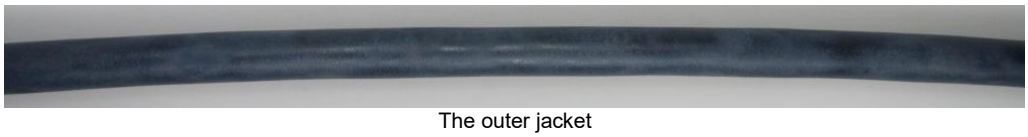
Interim report 20.09.2012:
At the 20.09.2012 after 5.520.483 cycles, we demounted cable no. 1.2, because we wanted to finalize the test.

Interim report 02.10.2012:
At the 02.10.2012 after 5.757.723 cycles, we demounted cable no. 1.1, because we wanted to finalize the test.

Evaluation

Dissection Report:

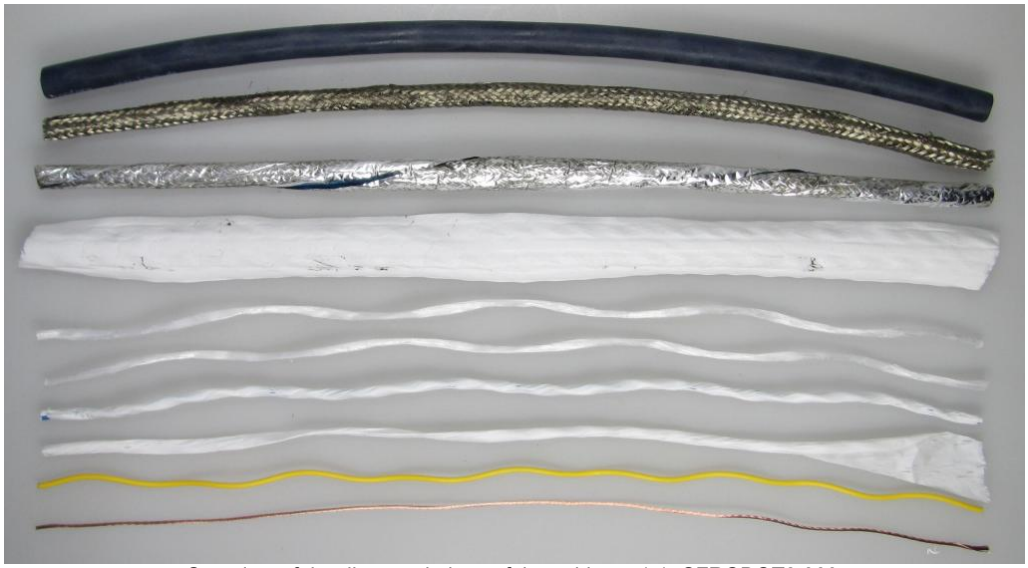
The condition of the cable no.1.1 (CFROBOT8.060) after 5.757.723 cycles



The outer jacket

The ruptured tinned braided copper shield

The copper conductor



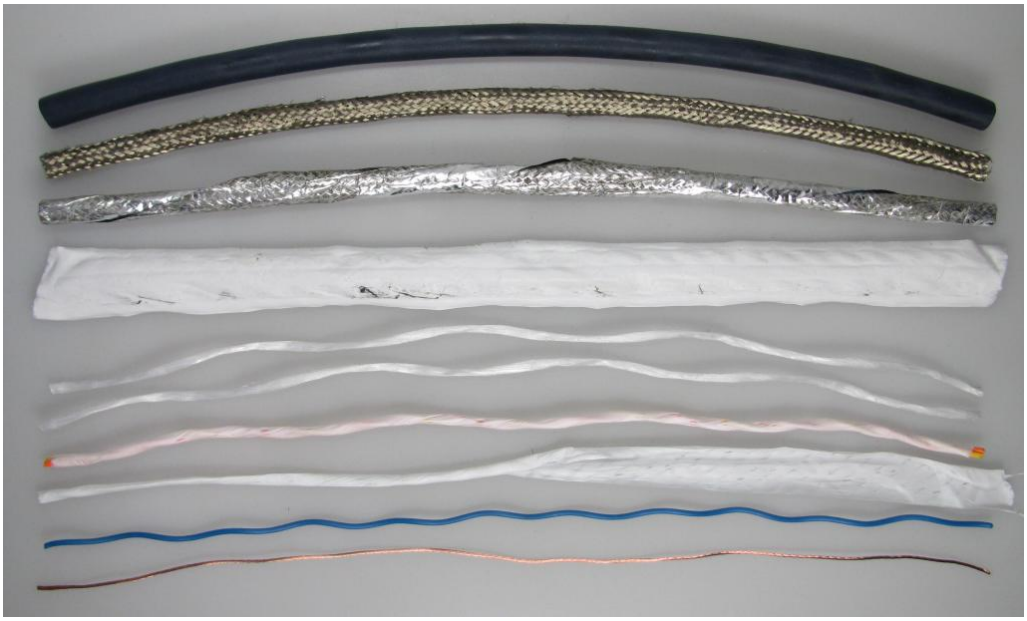
Overview of the dissected piece of the cable no.1.1, CFROBOT8.060.

Cycles [±180°]	5.757.723
Condition outer jacket	O.K.
Condition overall shielding	Ruptured
Condition outer banding	Ruptured
Condition inner banding	O.K.
Condition filler	O.K.
Condition element banding	O.K.
Condition core insulation	O.K.
Condition core stranding	O.K.

The condition of the cable no.1.2 (CFROBOT8.060) after 5.520.483 cycles

The outer jacket

The ruptured tinned braided copper shield



Overview of the dissected piece of the cable no.1.2, CFROBOT8.060.

Cycles [±180°]	5.520.483
Condition outer jacket	O.K.
Condition overall shielding	Ruptured
Condition outer banding	Ruptured
Condition inner banding	O.K.
Condition filler	O.K.
Condition element banding	O.K.
Condition core insulation	O.K.
Condition core stranding	O.K.

Name:	Christian Mittelstedt	Date:	12.11.2015