Postbauer-Heng, 31. October 2017

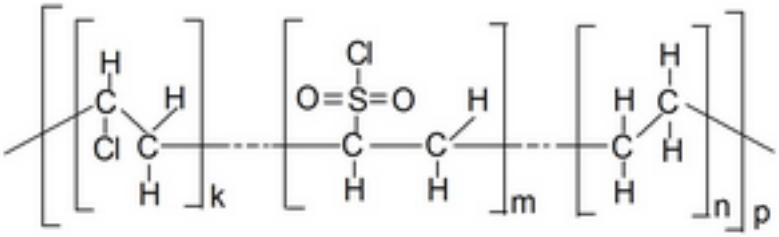
TEST REPORT FOR CSM MATERIAL (formally known as HYPALON) from

Pennel Flipo ./. FORMOSAN RUBBER COMPANY

Hypalon is a trademark for chlorosulfonated polyethylene (CSPE) synthetic rubber (CSM) noted for its resistance to chemicals, temperature extremes, and ultraviolet light. It was a product of DuPont Performance Elastomers, a subsidiary of DuPont. DuPont stopped the production of Hypalon in 2009 due to little demand. Today there is **NO** material in the world with the name HYPALON. It can only be called CSM (formally known as Hypalon).

1. **What is CSM**?

   The chemical formula of CSM is this:



2. **Is there any difference in CSM between Pennel Flipo and FORMOSAN RUBBER COMPANY?**

   Yes there is, but to say it straight, you cannot say one is better than the other, because the chemical formula for CSM is the same. They differ mainly in thickness and therefore resistance, abrasion; tear strength, adhesion and weight.

3. **What is the technical data of HYPATEX and which material does ZAR mini use?**

   a. For boats including RIB14 and smaller we use HYPATEX – **RMT1C-5001**

				Method
Thickness:	1.00	(+/-0.05)	mm	ISO 2286-2
Weight:	1300	(+/-130)	g/sqm	ISO 2286-3
	Warp	**Weft**		
Tensile strength:	>=350	>=350	daN/5cm	ISO 1421
Tear strength:	>=14	>=16	daN	ISO 4674-1
Adhesion:	>=15	>=15	daN/5cm	ISO 2411

   b. For boats including RIB15 and larger we use HYPATEX – **RMT1J-0021**

				Method
Thickness:	1.25	(+/-0.05)	mm	ISO 2286-2
Weight:	1500	(+/-130)	g/sqm	ISO 2286-3
	Warp	**Weft**		
Tensile strength:	>=500	>=460	daN/5cm	ISO 1421
Tear strength:	>=20	>=16	daN	ISO 4674-1
Adhesion:	>=15	>=15	daN/5cm	ISO 2411

4. **What is the technical data from ORCA?**

Pennel Flipo has many different ORCA classes, just like:

ORCA 219

				Method
Thickness:	0.7	(+/-0.05)	mm	ISO 2286-2
Weight:	935	(+/-100)	g/sqm	ISO 2286-3
	Warp	**Weft**		
Tensile strength:	>=275	>=275	daN/5cm	ISO 1421
Tear strength:	>=12	>=10	daN	ISO 4674-1
Adhesion:	>=12.5	>=12.5	daN/5cm	ISO 2411

ORCA 820

				Method
Thickness:	0.7	(+/-0.05)	mm	ISO 2286-2
Weight:	1140	(+/-120)	g/sqm	ISO 2286-3
	Warp	**Weft**		
Tensile strength:	>=300	>=300	daN/5cm	ISO 1421
Tear strength:	>=20	>=15	daN	ISO 4674-1
Adhesion:	>=15	>=15	daN/5cm	ISO 2411

ORCA 828 (ACCORDING TO Pennel Flipo comparable to our RMT1C-5001)

				Method
Thickness:	UNKNOWN	(+/-0.05)	mm	ISO 2286-2
Weight:	1340	(+/-140)	g/sqm	ISO 2286-3
	Warp	**Weft**		
Tensile strength:	>=350	>=350	daN/5cm	ISO 1421
Tear strength:	>=20	>=16	daN	ISO 4674-1
Adhesion:	>=15	>=15	daN/5cm	ISO 2411

ORCA 866 (ACCORDING TO Pennel Flipo comparable to our RMT1J-0021)

				Method
Thickness:	UNKNOWN	(+/-0.05)	mm	ISO 2286-2
Weight:	1565	(+/-165)	g/sqm	ISO 2286-3
	Warp	**Weft**		
Tensile strength:	>=500	>=460	daN/5cm	ISO 1421
Tear strength:	>=33	>=35	daN	ISO 4674-1
Adhesion:	>=15	>=15	daN/5cm	ISO 2411

5. **Conclusion**

Hypalon does not exist anymore. The chemical formula for CSM is always the same. As written above, there is no material better or worse. Both are good, but they have different specification. Compare the specifications and you will see!