

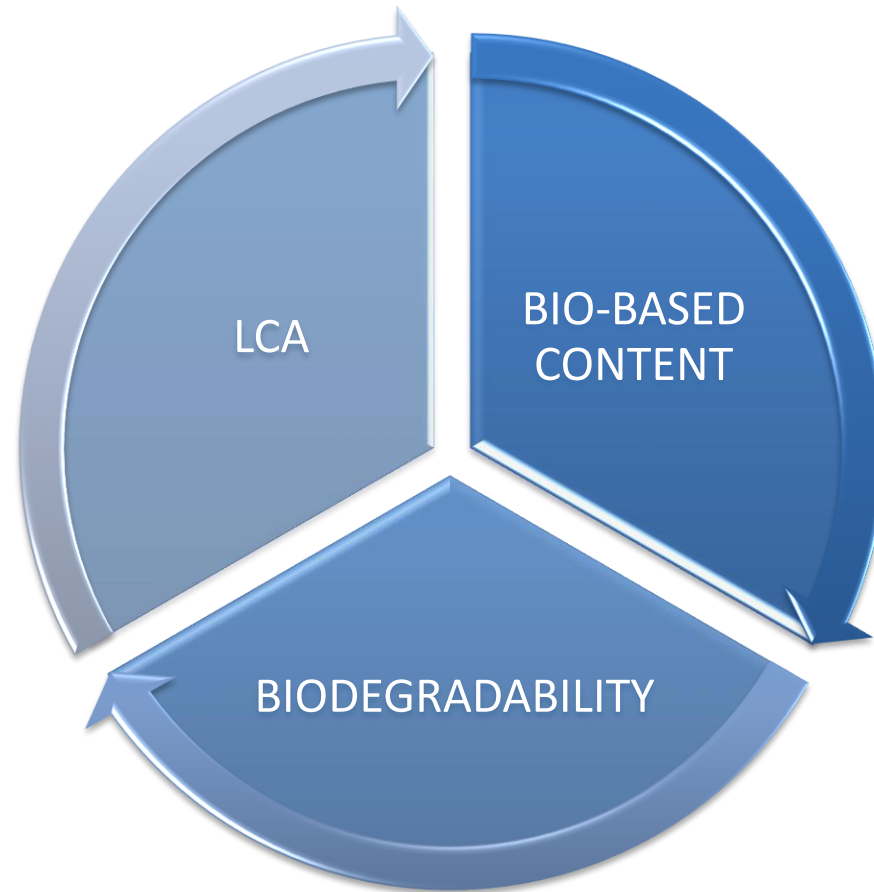
SUSTAINABLE CHEMICALS, FITTING THE FUTURE LEATHER TRENDS



TRUMPLER
DIE CHEMIE STIMMT

SUSTAINABLE CHEMICALS

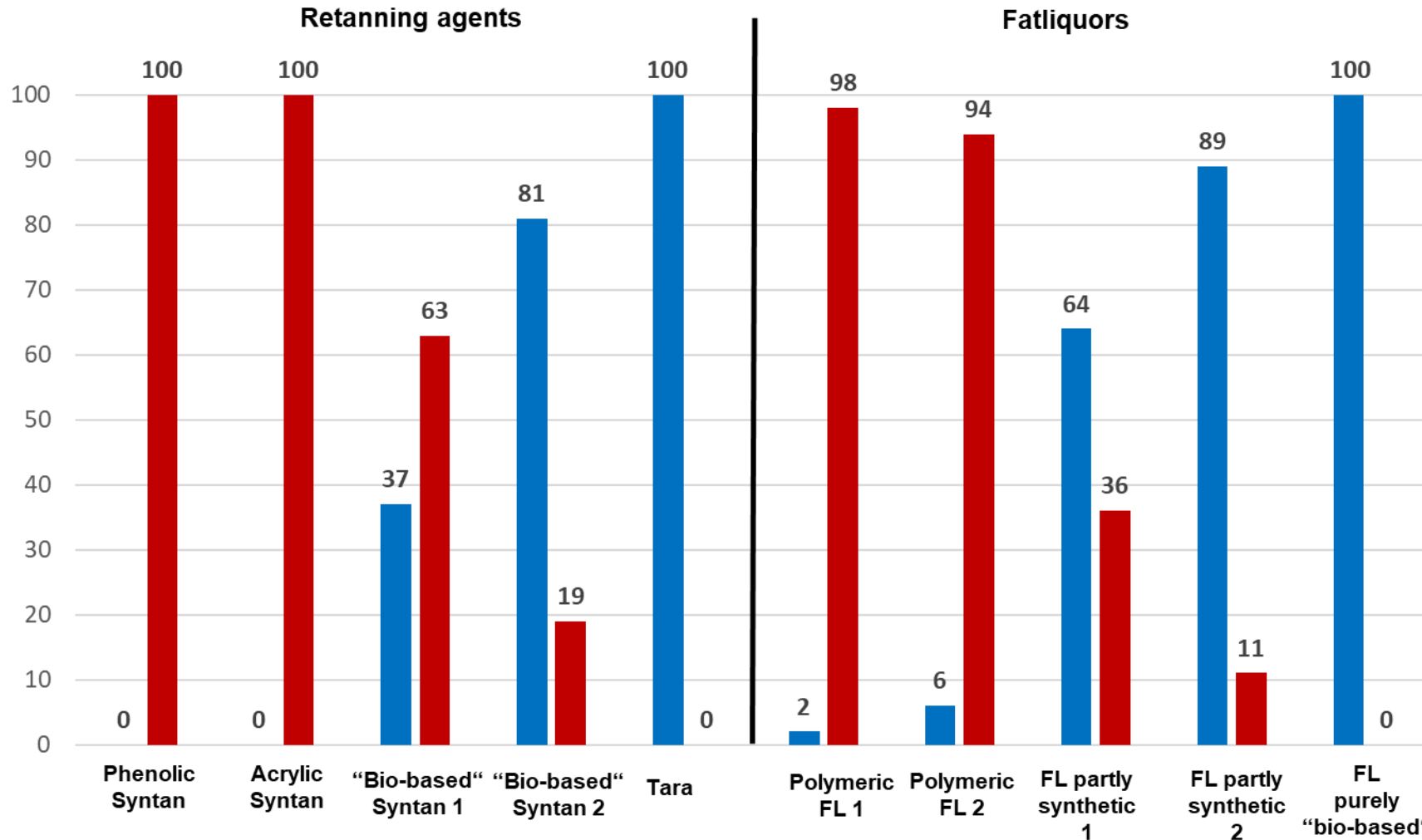
BIO-BASED CONTENT





ASTM-D6866 APPLIED ON LEATHER CHEMICALS

- Traditional syntans contain no renewable Carbon.
- Appropriate formulation can significantly increase renewable Carbon in syntans.



- Polymeric softeners contain very little renewable carbon.
- High performance fatliquors can be produced with very high levels of renewable carbon.

B. Autenrieth, M.P. Walker, U. Buckenmayer, *Leather: A natural, high-tech material*, Pro-Leder: 2020, issue 4, p. 8-11. ILM: 2020, issue 43, p. 67-72.

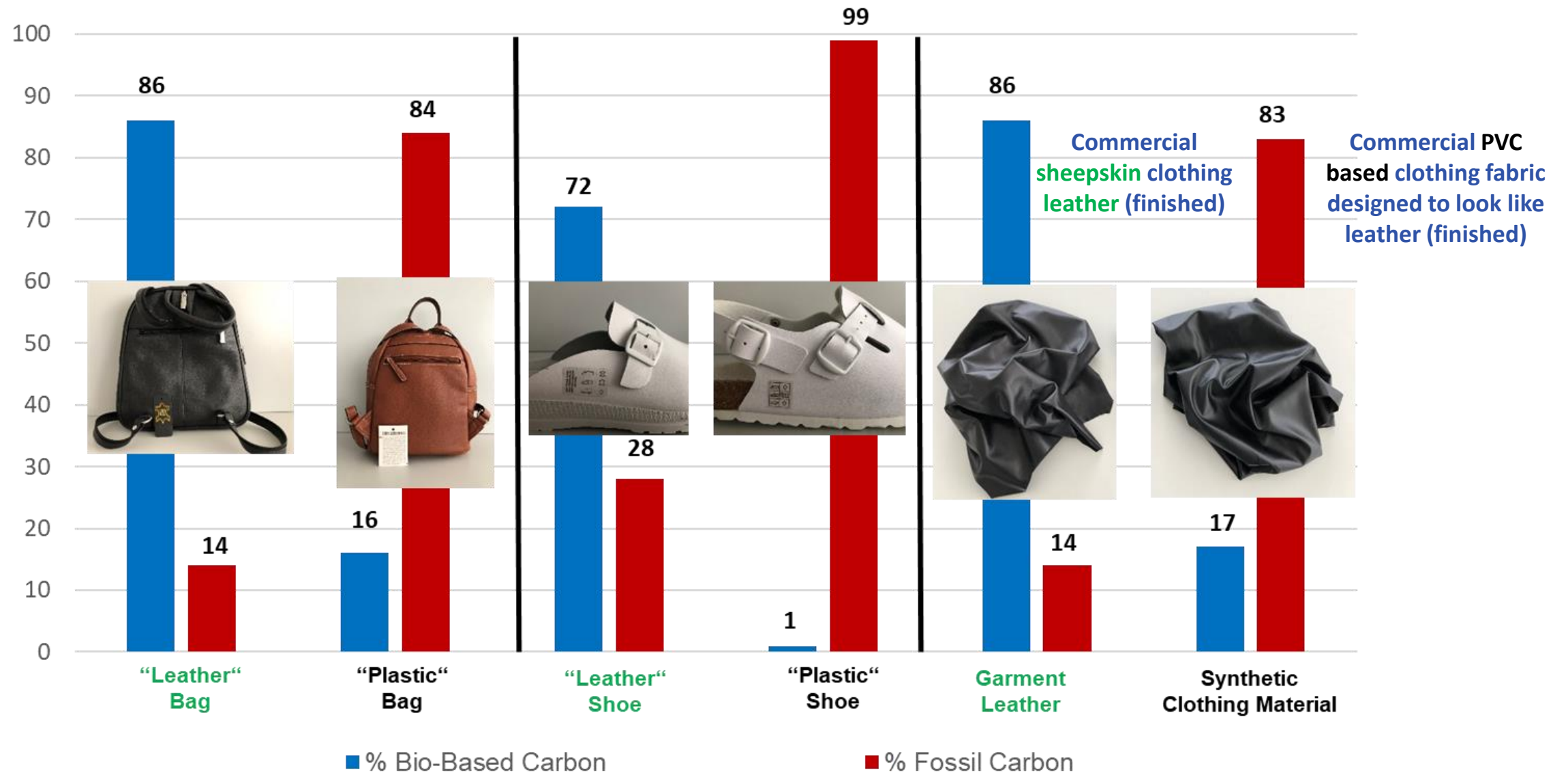
www.trumpler.com

■ Bio-Based Carbon ■ Fossil Carbon
TRUMPLER International

DIN EN 16785-2:2018-05 "Biobased products – Bio-based content- Part 2: Determination of the bio-based content using the material balance method"

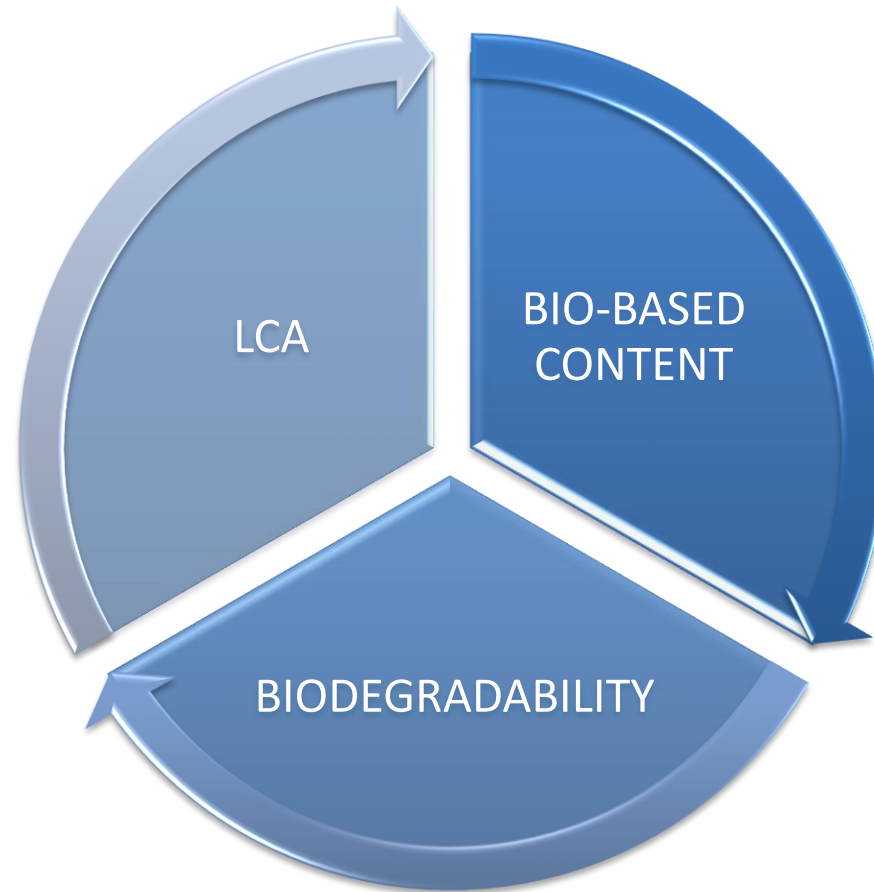


ASTM-D6866 on articles of our Daily Life



SUSTAINABLE CHEMICALS

BIODEGRADABILITY





BIODEGRADABILITY VS COMPOSTABILITY

BIODEGRADABILITY

Something that over the time, is broken down into its natural components by biological organisms like bacteria and fungi.

Natural process

Unspecified amount of time

COMPOSTABILITY

Specific type of biodegradation under controlled conditions to transform organic wastes into fertilizers, by natural processes, within a certain period of time

Controlled process

Specific time frame (around 30-180 days)



Biodegradable



Compostable



VEGETAL LEATHERS COMPOSTING TRIALS

COWLEATHER Starting trials

Chestnut Mimosa Quebracho Tara Mirabolano Summac Tara liq. pickle



Cowleather Starting trials

Industrial
Composting



Cowleather final results,
50 days

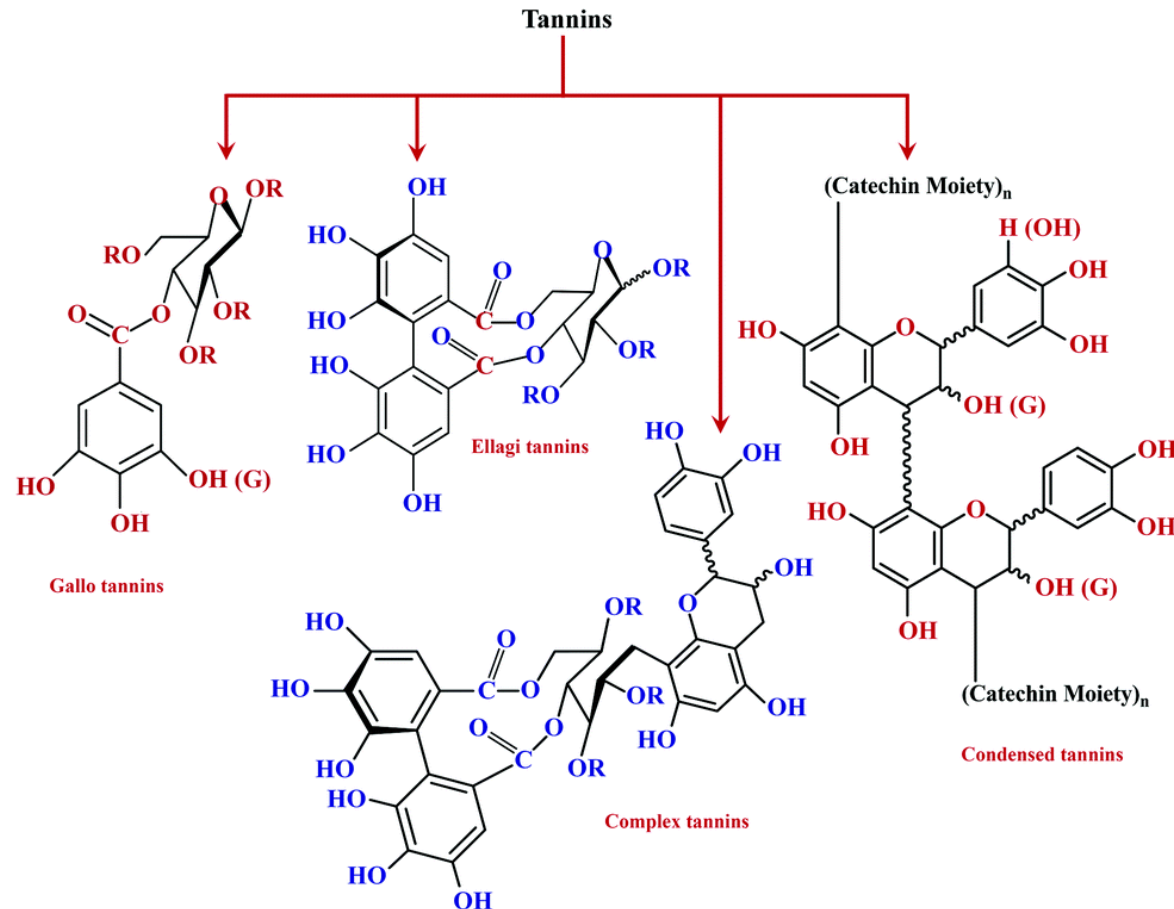
Biodegradability OECD 301F	52 %	9 %	38 %	56 %	74 %	53 %	45 %	85 %
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VEGETAL LEATHERS COMPOSTING TRIALS

HYDROLYSABLE TANNIN

- Chinese gallnut
- Sumac
- Tara
- Chesnut
- Valonia
- Quercia
- Myrobalan
- Algarobilla
- Divi-Divi

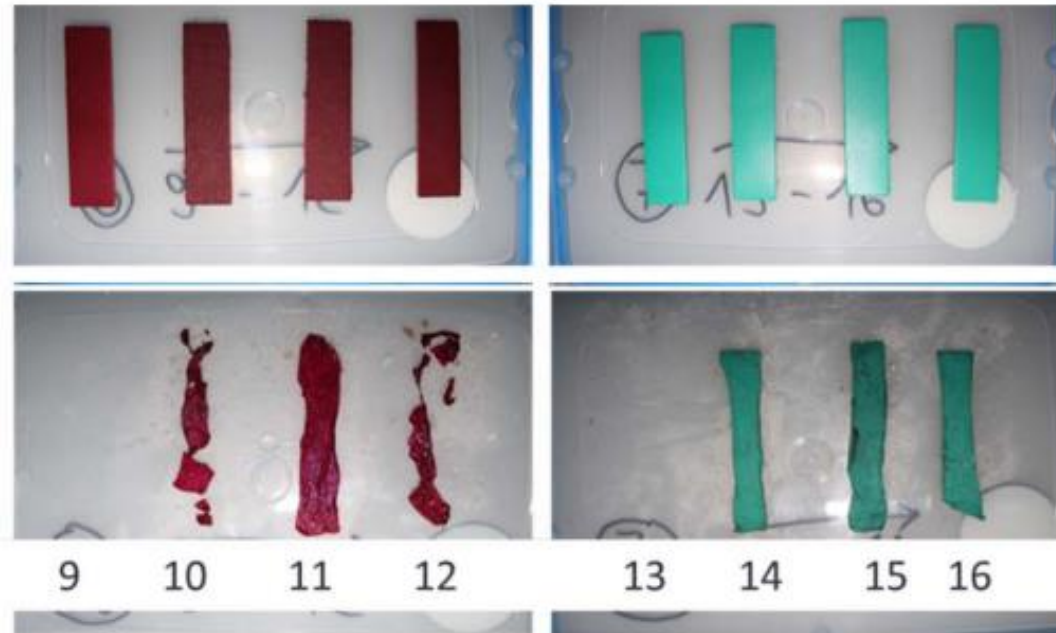


NON HYDROLYSABLE TANNIN

- Quebracho
- Mimosa
- Mangrovia
- Gambier
- Catechu



COMPOSTING FINISHED LEATHER



DIN EN ISO 20200
31 days 58°C

Gluteraldehyde tannage (red leather)

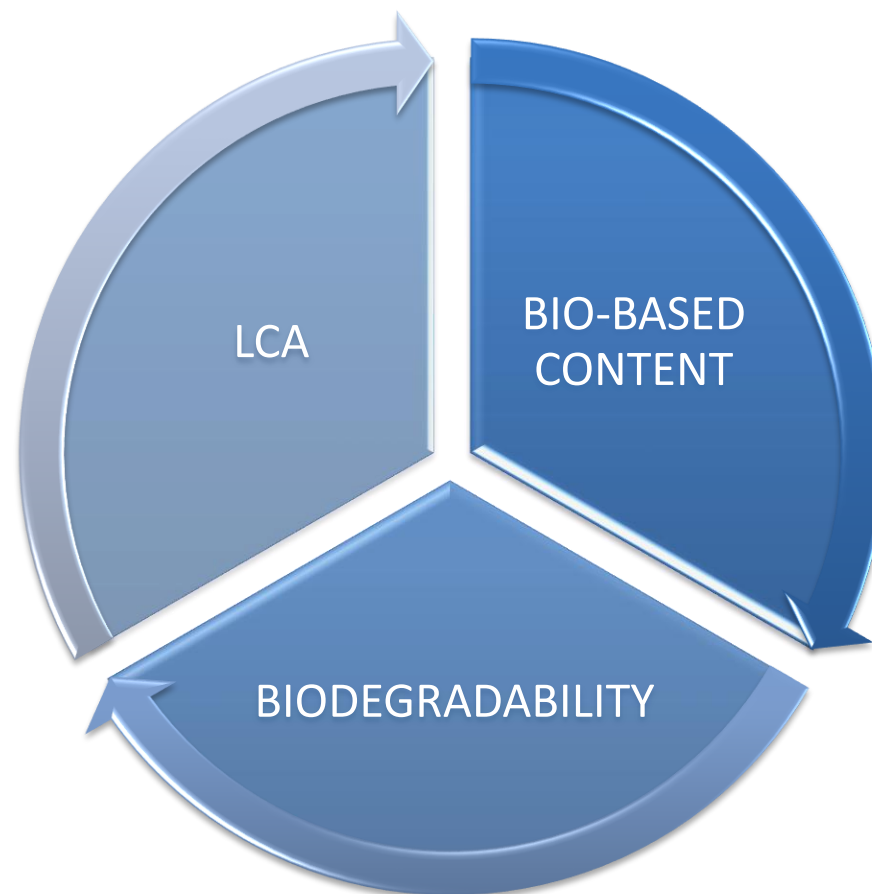
- 9.- Base coat- without crosslinker
- 10.- Top coat- without crosslinker
- 11.- Top coat- with isocyanate crosslinker
- 12.- Top coat- with polyaziridine

Wet blue based (green leather)

- 9.- Base coat- without crosslinker
- 10.- Top coat- without crosslinker
- 11.- Top coat- with isocyanate crosslinker
- 12.- Top coat- with polyaziridine

SUSTAINABLE CHEMICALS

LCA

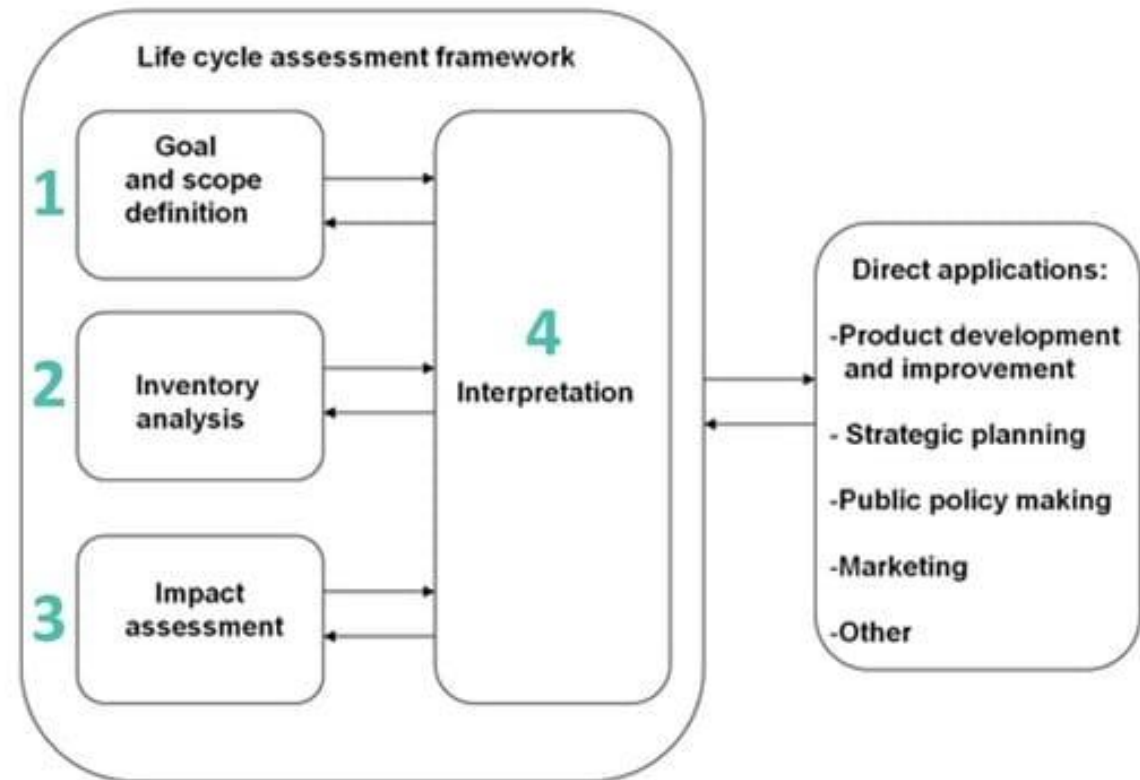


LIFE CYCLE ASSESSMENT

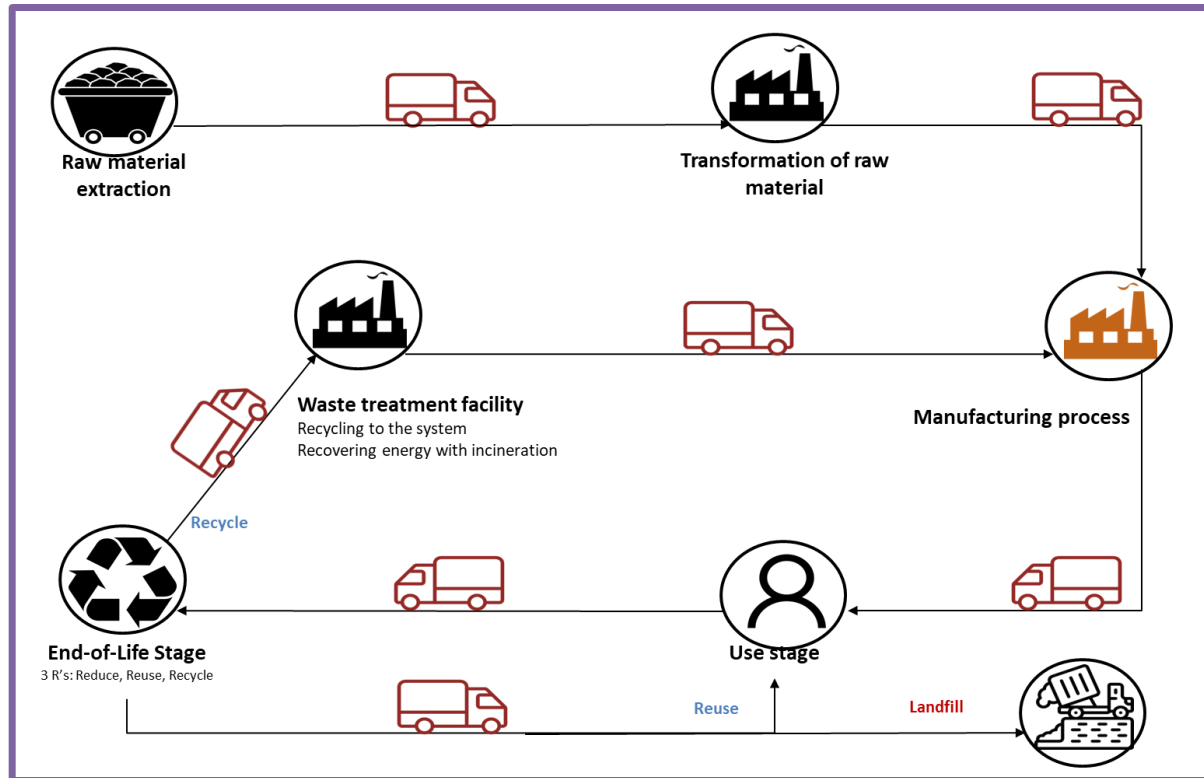
The methodology for assessing the potential environmental impacts of products, processes, and organisations throughout its life cycle stages.

Standardized by ISO 14040:2006 & ISO 14044:2006.

It follows multiples stages:



Environmental impact categories considered for LCA



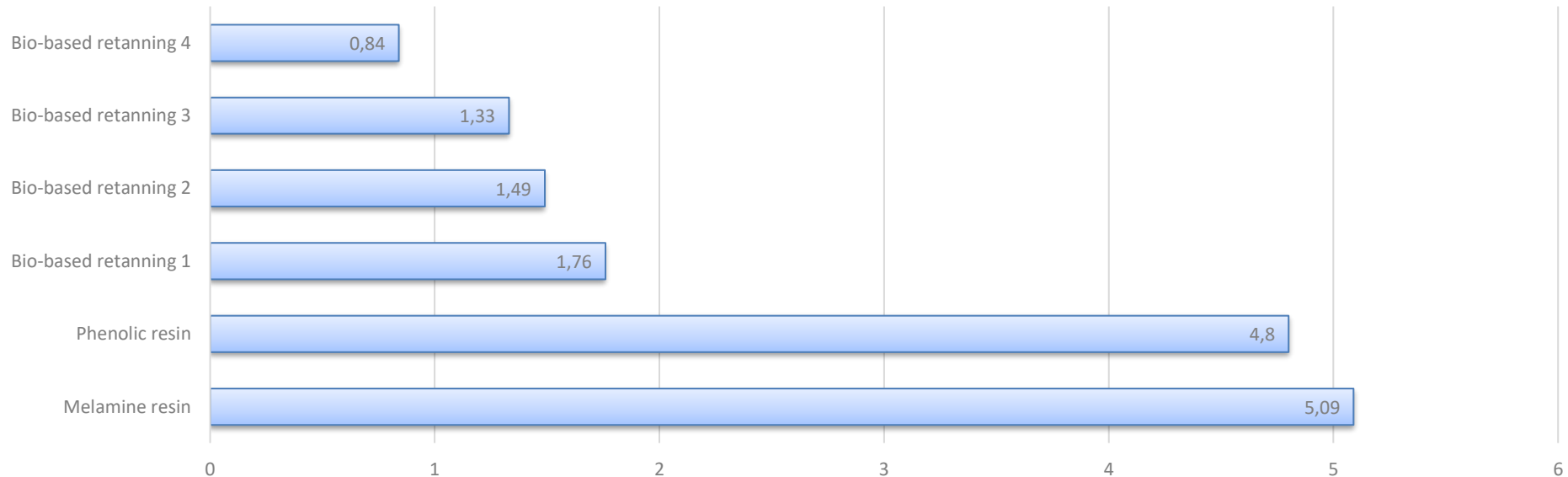
Cradle-to-gate

Cradle-to-grave



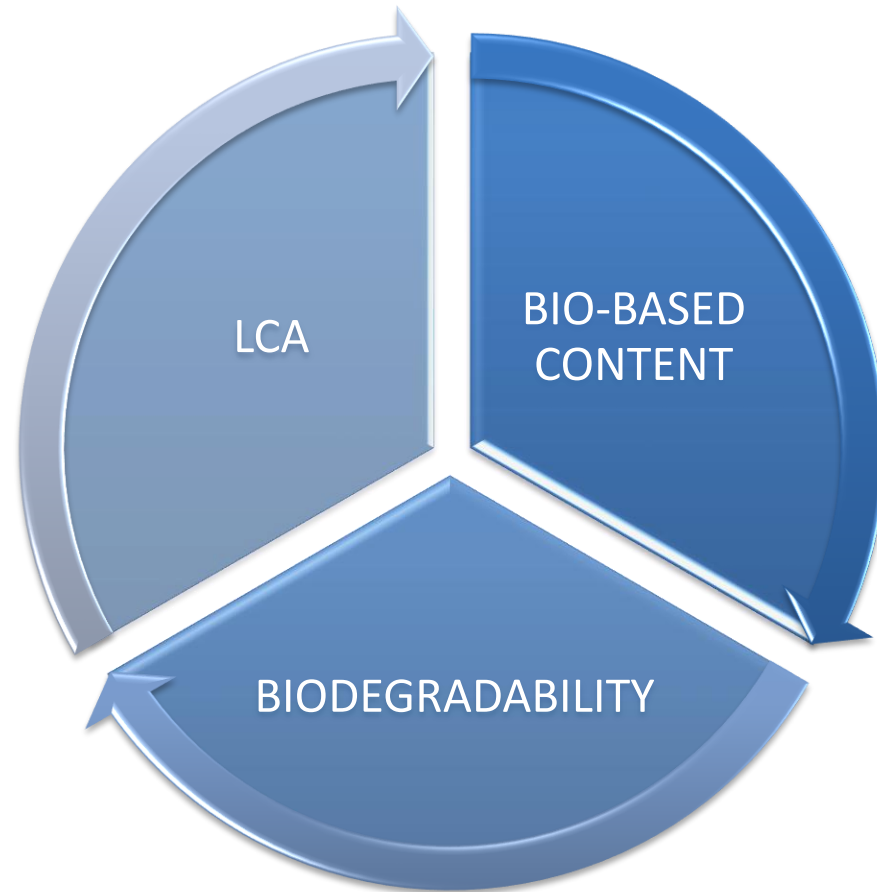
Contrasting values

Climate Change- Carbon footprint
Kg CO2 (IPCC GWP 100a), *LCA UNE-EN ISO 14040:2006 standard



- No certified LCA information available from leather chemical producers
- Some information in database (ecoinvent...) not related with an specific chemical producers
- Over time and more data it will be posible to compare accuratly values.

FITTING SUSTAINABILITY



THANKS FOR YOUR ATTENTION



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