

cloroSur 11<sup>th</sup> TECHNICAL SEMINAR WCC GST SAFETY WORKSHOP TABLE TOP EXPO November, 14-16, 2018 Monterrey- Mexico

## **CHLORINE TO CHLORINE**

**Chlorinated plastics materials for chlorine plants** 







The purpose of this presentation is to contribute to increase use of chlorinederived plastic materials in chlorine plants.

JOSÉ AGATONICE BRITO brito@glastec.com.br November, 2018





## **GLASTEC PRESENTATION**

We are Brazilians companies how is in the composites market **over 40 years**, seeking new technologies, national and international partnerships to create inviting solutions for our customers.

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We provide composite pipe, fittings, equipment and field services for the **chemical**, oil & gas, mining and construction.

Our portfolio includes:

✓ Supply **pipes, fittings and spool** for onshore and marine applications

✓ Supply stock tanks, reactors, process vessels and columns for refineries, chemical plants and oil platforms

✓ Supply water and sewage treatment systems

✓ Provide field services such as: Installation, anti-corrosion coatings, steel lining

thermoplastic, maintenance, rehabilitation structure, assembly and plant shutdowns.





WORKSHOP

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# JOINVILLE/SC SITE

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TOTAL LAND	200.000 M2
TOTAL BUILDINGS AREA	15.000 M2
INDUSTRIAL BUILDINGS AREA	14.000Mm2

#### **INSTALATIONS**

- FW MACHINES FOR PIPE AND TANQUES
- •CRANES
- •HYDRO-TESTS LABS
- CURE OVENS
- •QUALITY CONTROL AND TEST LABS







## MARECHAL DEODORO/ALAGOAS MAIN FACILITY

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TOTAL	40.000	
LAND		M2
AREA		
TOTAL		12.000
BUILDING	S M2	
AREA		
TOTAL		10.000
INDUSTRI	AL	M2
AREA		

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## **DIAS D'AVILA/BAHIA - SITE**

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TOTAL LAND	4.000 M2
TOTAL BUILDINGS AREA	2.5000 M2
INDUSTRIAL BUILDINGS AREA	2.000 M2

#### **INSTALATIONS**

•MOBILE TRUCK CRANE •QUALITY CONTROL AND TEST •FIELD SERVICE EXPERTISE







# **CHARQUEADA/SP - SITE**

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40.000
M2
3.000
M2
2.500
M2

#### **INSTALATIONS**

- FW MACHINES
- •CRANES
- •HYDRO-TESTS
- •CURE OVENS
- •QUALITY CONTROL AND TEST LABS







## COMPOSITE PIPING & EQUIPMENTS PRODUCTION CAPACITY INSTALLED

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PRODUCT	CAPACITY	
PIPE AND FITTINGS	10.000 ton/year	
EQUIPMENTS	1.000 ton/year	
SERVICES, SPECIAL PROJECTS AND OTHERS	1.000 ton/year	
TOTAL	12.000 ton/year	

**NOTE:** Estimated capacity may vary depending on the type of product or service





## FROM CHLORINE TO CHLORINE PRODUTION CHAIN

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## **CHLORINE DERIVATIVES**

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# CHLORINE DERIVATIVESAREPRESENTINPLASTICRESINSORINPLASTICSSYNTHESESIN



Source: http://www.clorosur.org/downloads/Chlorine tree



## THERMOPLASTICS RESINS VINYLS

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Chlorine is present in the synthesis the all monomer. Some times the Sodium is also to use on the reactions of synthesis:



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## THERMOPLASTICS RESINS SUMMARY

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	Туре	Monomer	Polymers	% Chlorine in Weigth
	S		PVC	57 %
17 Colorine	VINYLI	VCM	UPVC	57 %
			CPVC	73 %
	MERS	TFE	PTFE	40 %
		HFP + TFE	FEP	72 %
	ррогу	PVE + TFE	PFA	40 %
• /////////////////////////////////////	LUOR	CTFE	ECTFE	24 %
	Ľ.	VDF	PVDF	35 %







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## PRODUCT AND SERVICES STANDARDS

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PRODUCT/SERVICE	STANDARD		
FRP			
Tanks	ASME RTP-1, ASTM D-4097, ASTM D-3299		
Composite Oil&Gas Piping System	ASTM F 1173 , ISO 14692, ASTM D-4024		
Pipe and Fittings	ASTM D-6041, ASTM D-5421, ASTM D-2996, ASTM D-5685, NRB-15536		
Тесріре	ASME PCC -2		
FRP + Thermoplastic (PVC-CPVC-PP-PVDF-ECTFE-PFA)			
Steel Lining	DIN 2805, DIN 28053		
Dual Laminated	ASME RTP 1		
Thermoplastic Welding	Hot Gas, Butter Fusion, electrofusion		







#### TYPICALS TERMOPLASTICS AND TERMOSETTING APLICATIONS

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WHAT?	WHERE?	HOW?	NOTES
PROCESS EQUIPMENTS	<ul> <li>CHLORINE DRYING TOWER</li> <li>SODIUM HYPOCHLORIDE</li> <li>HCL ABSORTION TOWER</li> <li>STIPPER COLUMN</li> <li>GAS WASHER</li> <li>D'MISTER / CLEXCHEVRON</li> <li>OTHERS</li> </ul>	DUALAMINATE FRP	OVER 30 YEARS SUCCESSFUL APLICATIONS





## **EQUIPMENT PROJECTS**

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CHLORINE SCRUBBER DUOLAMINATE FRP + CPV 22,0 M HEIGHT X 3,7 M DIAMETER



CHLORINE REATOR - DUOLAMINATE FRP + ETCFE 4,5 M HEIGHT X 6,0M DIAMETER



**DIMENSIONS 7,0 M x 4,3 M x 4,0 M** 

HCL ABSORPTION COLUMN - FRP 16 M HEIGH X 2,3 M DIAMETER

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#### **SPECIAL PROJECTS**

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#### TYPICALS TERMOPLASTICS AND TERMOSETTING APLICATIONS

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WHAT?	WHERE?	HOW?	NOTES
STORAGE TANKS	<ul> <li>HCL</li> <li>SODIUM HYPOCHLORITE</li> <li>H2SO4</li> <li>EFFLUENTS</li> <li>WATER</li> <li>CÁUSTICS</li> <li>OTHERS</li> </ul>	DUALAMINATED FRP	SMALL AND BIG TANKS
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CASES - TANKS







#### TYPICALS TERMOPLASTICS AND TERMOSETTING APLICATIONS

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WHAT?	WHERE?	HOW?	NOTES
PIPE SYSTEM	<ul> <li>•CHLORINE HEADER</li> <li>•H2 HEADER</li> <li>•BRINE</li> <li>•CAUSTICS</li> <li>•EFLUENTS</li> <li>•OTHERS</li> </ul>	DUOLAMINATED FRP	





**CASES - PIPES** 

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**GRE + PU PIPE AND FITTINGS FOR APPLICATIONS WHERE EXTERNAL RESISTANCE THE IMPACT IS REQUIRED (PATENTED IN USA)** 





## PIPE MANUFACTURING PROCESS

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#### **STRUCTURAL REHABILITATION IN COMPOSITE**

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#### TYPICALS TERMOPLASTICS AND TERMOSETTING APLICATIONS

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WHAT?	WHERE?	NOTES
FRP REVESTIMENT STEEL LINE COATINGS	<ul> <li>CELL ROOMS</li> <li>PROCESS AREA FLOOR</li> <li>EFLUENT TANKS</li> <li>BRINE TRATAMENT TANKS</li> <li>TRANSPORT TANKS STEEL - INTERNALS REVESTIMENTS</li> <li>SCRUBBERS</li> <li>EFFLUENTS TANKS</li> <li>OTHERS</li> </ul>	





#### **CORROSION PROTECTION**

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**FRP COATING** 中山 **STEEL LINE FLUORPOLIME R COATING** (CLASSIE) cloroSur

### LOGISTICS AND ASSEMBLY

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#### TYPICALS TERMOPLASTICS AND TERMOSETTING APLICATIONS

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WHAT?	WHERE?	HOW?	NOTES
PULTRUDED STRUCTURIES	<ul> <li>LEDEARS</li> <li>FLOOR GRADES</li> <li>STEPS</li> <li>COVERS</li> <li>LIGHT SUPORTS</li> <li>ELECTRICAL CABLE SUPORTS</li> <li>PIPE SUPORTS</li> </ul>		
CELL ROOM	•CELL TOP •ACESSORIES	FRP DCPD DUOLAMINATED	





CASES – ASSEMBLY

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#### QUALITY CONTROL & INOVATION IN HOUSE LABS

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#### cloroSur **11<sup>th</sup> TECHNICAL SEMINAR CERTIFICATIONS & AWARDS** WCC GST SAFETY WORKSHOP **TABLE TOP EXPO** November, 14-16, 2018 Monterrey - Mexico 284 APPROVED PA ABS COMPROMISSO COM A EXCELÊNCIA MOVIMENTO **ALAGOAS** COMPETITIVA PAPPROVED PHON BR TYPE DNV.GL PETROBRAS DNVGL.COM/AF Braskem PRÊMIO MELHORES FORNECEDORES DE BENS E SERVIÇOS bsi. Dow (GLASTIEC cloroSur







## WHY NOTE?

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TYPICALY SPECIFICATION RECOMENDS PLASTICS FOR SOME OF THE MOST AGRESSIVE CHEMICALS ENVIROMENTS AND MECHNICAL STRONG REQUIMENTS. BUT USUALLY DOES NOT SPECIFY FOR SIMPLES APLICATIONS SOURCHE AS:

- 1. COOLER WATER
- **2.** AIR
- 3. FIRE WATER
- 4. SANITARY WATER
- 5. WATER STORAGE TANKS
- 6. PIPE RACK SUPORTS
- 7. ACESS STRUCTURIES
- 8. DEFENSES
- 9. GATES
- **10. WALKWAY RAIN AND SUN PROTACTION CONVERS 11. ETC., ETC., ETC....**

THINK ABOUT PLASTIC SOLUTIONS... IT IS CHLORINE USE AND THEM MORE CHLORINE PRODUTION







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CONTACTS

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