

Oasis ISOLATION SOLUTIONs الواحة لحلول العزل

OASIS ISOLATION SOLUTIONS O.I.S

POLYUREA

TECHNICAL PRESENTATION

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POLYUREA SPRAY TECHNOLOGY





DURABILITY , FAST CURING , LONG TERM WARRANTEE APPLICATION

PRESENTATION GUIDE LINES

PLEASE CLICK CONTROL TO GO THE SPECIFIED LINK





□ POLYUREA OVERVIEW



✓ **POLYUREA** TECHNICALLY SPEAKING IS A 100% SOLIDS, PLURAL

COMPONENT SPRAY APPLIED ELASTOMER THAT IS FAST CURING WITH

EXCEPTIONAL PHYSICAL PROPERTIES SUCH AS FLEXIBILITY,

DURABILITY, AND CHEMICAL RESISTANCE

- POLYUREA IS DRIVEN FROM 2 COMPONENTS (A, B), THROUGH MIXING RATIO 1:1.1 BETWEEN THE TWO COMPONENTS ,POLYUREA IS
 PRODUCED
- ✓ **<u>PACKING</u>** OF POLYUREA MATERIAL IN TWO DRUMS EACH DRUM 200 KG
- ✓ **POLYUREA** PRODUCING NEEDS HIGH TEMPARTURE REACH TO 80°C
- ✓ **POLYUREA** PRODUCING NEEDS HIGH PRESSURE REACH TO 3000 PSI
- ✓ **POLYUREA** NEEDS SPECIAL PLURAL SPRAY REACTOR AND SPECIAL EQUIPMENT

SIMPLE EXPAINATION OF POLYUREA PRODUCTION PROCESS



POLYUREA IS A TYPE OF ELASTOMER THAT IS DERIVED FROM THE REACTION PRODUCT OF AN ISOCYANATE COMPONENT AND A SYNTHETIC RESIN BLEND COMPONENT THROUGH STEP-GROWTH POLYMERIZATION. THE ISOCYANATE CAN BE AROMATIC OR ALIPHATIC IN NATURE. IT CAN BE MONOMER, POLYMER, OR ANY VARIANT REACTION OF ISOCYANATES, QUASI-PREPOLYMER OR A PREPOLYMER. THE PREPOLYMER, OR QUASI-PREPOLYMER, CAN BE MADE OF AN AMINE-TERMINATED POLYMER RESIN, OR A HYDROXYL-TERMINATED POLYMER RESIN THE RESIN BLEND MAY BE MADE UP OF AMINE-TERMINATED POLYMER RESINS, AND/OR AMINE-TERMINATED CHAIN EXTENDERS. THE AMINE-TERMINATED POLYMER RESINS DO NOT HAVE ANY

INTENTIONAL HYDROXYL MOIETIES. ANY HYDROXYLS ARE THE RESULT OF INCOMPLETE CONVERSION TO THE AMINE-TERMINATED POLYMER RESINS. THE RESIN BLEND MAY ALSO

CONTAIN ADDITIVES OR NON-PRIMARY COMPONENTS. THESE ADDITIVES MAY CONTAIN

HYDROXYLS, SUCH AS PRE-DISPERSED PIGMENTS IN A POLYOL CARRIER. NORMALLY, THE RESIN

BLEND DOES NOT CONTAIN A CATALYST(S).

PRESS HERE TO GO PRESENTATION GUIDE









DOLYUREA ADVANTAGES



- NO VOC'S (VOLATILE ORGANIC COMPOUNDS)AND, DEPENDING ON THE FORMULATION, ODOR-FREE
- □ FAST CURING MATERIALS AFTER APPLICATION
 - ✓ GEL TIME 10 SECONDS
 - DRY TIME **30** SECONDS

□ APPLICATION TEMPERATURE: -30°C TO +60°C, EVEN IN HIGH HUMIDITY CONDITIONS

□ EXCELLENT HEAT RESISTANCE UP TO 130°C, SHORT-TERM UP TO 220°C

□ LARGE ELONGATION AT BREAK, > 400 %

- □ HIGH TENSILE STRENGTH, IN THE ORDER OF 1450 4350 PSI (10 30 MPA)
- □ EXCELLENT CHEMICAL AND ABRASION RESISTANT

GOOD RUST & CORROSION RESISTANT

- EXCELLENT BONDING TO PROPERLY PREPARED SUBSTRATES, FLEXIBLE (BRIDGES CRACKS)
- □ FAST APPLICATION , AS IT IS APPLIED BY SPRAY AND CAN REACH THE DEEPEST POINTS IN THE SUBSTRATE , ONE TEAM WORK WITH 1 MACHINE CAN SPRAY FROM 60-80 SQM / HOUR # >500 SQM / WORKING DAY
- □ ECOLOGICALLY FRIENDLY & ODORLESS

LIGHT ON THE SUBSTARTE AS CAN BE APPLIED IN THICKNESS MINIMUM 2 MM

- □ EXCELLENT ADHESION ON VARIOUS SURFACE TYPES
- LONG LIFE APPLICATION REACH TO 20 YEARS AND EASSY TO REPAIR AND MAINTAIN



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□ POLYUREA TESTING VIDEOS







✤ VIDEOS ARE USED TO SHOW THE ABILITY OF POLYUREA

✤ PROJECTS VIDEOS AVAILABLE IN E-SMART BROCHOUR



□ POLYUREA APPLICATION EQUIPMENT

- > REACTOR (PLURAL HOT SPRAY MACHINE SPECIALIZED FOR POLYUREA
- HEATED HOSE THAT TRANSFER MATERIAL FROM MACHINE TO THE SPRAY GUN

- FUSION SPRAY GUN
- MATERIAL FLUID HOSES
- MATERIAL PUMPS
- AGITATOR FOR MAXING PART B
- HEATED WHIP HOSE WITH HEAT SENSIOR CONNECTED TO GUN
- TRANSFORMER (TO CHANGE ELECTRICITY IN SITE FROM 220 V TO 380 V
- CHANGE OVER
- ELECTRICITY CABLES 3 PHASES
- ➢ AIR COMPRESSOR 500 LITRE
- ➢ AIR HOSES & CONNECTIONS
- > TOOLS FOR INSTALLATION & CLEANING GUN

WORKING MECHANISM OF EQUIPMENT

- > CONNECTING THE MAIN ELEC. CABLE TO THE ELECTRICTY SOURCE IN WORK SITE
- THROUGH THE TRANSFORMER THE ELECTRICITY WILL GROW TO 380 V TO START UP THE REACTOR
- STARTING THE AIR COMPRESSOR TO FILL WITH AIR
- TRANSFERING THE AIR THROUGH CONNECTED HOUSES TO THE PUMPS ON THE A,B DRUMS
- THE PUMPS STARTS TO PUSH THE MATERIALS THROUGH THE FEED HOSES TO MACHINE TO STARTING THE NEXT STEP
- > THE MACHINE START TO RISE THE MATERIAL HEAT TO THE SPECIFIED DEGREE
- MACHINE PRESSURE RESPONSIBLE FOR PUSHING THE MATERIAL INTO HEATED HOSE THAT CAN REACH IN LENGTH TO 90 M TO THE GUN
- THE GUN THROUGH MECHANICAL PROCESS AND THROUGH MIXING CHAMBER WILL MIX THE MATERAL IN RATION 1:1 RATE
- PRODUCING POLYUREA IS THE FINAL PROCESS THAT IS SEEN IN THE NOZZLE OF GUN

WORKING EQUIPMENT & MECHANISM





□ POLYUREA SYSTEMS LAYERS & SOLUTIONS

TWO LAYERS # SYS.



THREE LAYERS # SYS.

DESCRIBE THE SYSTEM

INDOOR APPLIED SYSTEM NEED TO BE COVERED OR NOT TO BE EXPOSED TO SUN LIGHT

DEFINE LAYERS & THICKNESS:

LAYER	DEFINE	THICKNESS
FIRST LAYER	PRIMER	0.15 MM
SECOND LAYER	POLYUREA SPRAY	2 MM



[6.-

DEFINE WORK FLOW & STAGES

➢ SURFACE PREPARATION

- ✓ MECHANICAL GRINDING FOR CONCRETE SURFACE
- ✓ SAND SHOOT BLASTING FOR STEEL SURFACE
- ✓ MANUAL ABBRADING FOR CORRUGATED STEEL
- ✓ SKIRTING ANGLES & CRACKS OR HOLES REPAIR BY PU SEALANT AND PUTTY
- > CLEANING THE SURFACE CAREFULLY USING HIGH PRESSURE WATER JET CLEANING MACHINES
- > PRIMING PROCESS USING ROLLERS OR ONE COMPONENT SPRAY MACHINE
- > APPLYING POLYUREA SPRAY
- TESTING THE APPLIED SYSTEM

DESCRIBE THE SYSTEM

OUT DOOR APPLIED SYSTEM DOES NOT NEED TO BE COVERED BECAUSE OF PROTECTION LAYER

DEFINE LAYERS & THICKNESS:

LAYER	DEFINE	THICKNESS
FIRST LAYER	PRIMER	0.15 MM
SECOND LAYER	POLYUREA SPRAY	2 MM
THIRD LAYER	TOP COAT UV RESIS	0.10 MM



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- > APPLYING POLYUREA SPRAY
- > APPLYING THE TOP COAT LAYER , UV RESISTANT , COLOR STABILITY (OPTIONAL) COLOR
- TESTING THE APPLIED SYSTEM

NOTE 1 : 3 LAYERS #SYS. IS MOSTLY USED IN LEAKED OLD SUBSTRATE REPAIR NOTE 2 : POLYUREA SYSTEMS CAN BE APPLIED ABOVE PU FOAM



□ POLYUREA APPLICATION FIELDS

- ✓ PARKING AREAS & GARAGES
- ✓ BALCONIES & ROOF PROTECTION
- ✓ INDUSTRIAL FLOORS
- ✓ FREEZER ROOMS
- ✓ REFINERIES & DRILLING
- ✓ WATER PURIFICATION SYSTEM
- ✓ SEWAGE TANKS
- ✓ HEATING,OIL,GAS PIPLINES
- ✓ TRUCK BEDLINES
- ✓ MINERAL INDUSTRY
- ✓ MINNG & OIL PLATFORMS
- ✓ TUNNELS
- ✓ WATER WAYS
- ✓ WATER CHANNELS
- ✓ BRIDGES
- ✓ WATER TANKS
- ✓ SWIMMING POOLS
- ✓ DEFINCE APPLICATIONS

APPLICATION BUILDINGS AREAS :

- □ ROOFS
- □ BATHROOMS & TOILES
- □ BASEMENT & FOUNDATIONS
- □ PARKING AREAS & SWIMMING POOLS



































POLYUREA APPLICATION SURFACE PREPARATION REQUIRED



SURFACE PREPARATION IS CONSIDERED 80% OF THE SUCCESS OF THE

WATER INSULATION SYSTEM FOR MANY REASON :

- ✓ REMOVING ANY WEAK LAYERS ON THE SUBSTARTE
- ✓ HELP IN GOOD ADHESION BETWEEN THE COATING AND THE SUBST. AND

THAT GIVING HIGH BONDING

✓ EXCELLENT SURFACE PREPARATION PROFILES IS SPS4:SPS6

SURFACE PREPARATION DEPEND ON 3 MAIN STAGES :

- MECHANICAL PREPARATION
- > CLEANING PROCESS USING HIGH PRESSURE JET MACHINES
- > EXPANSION JOINTS , HOLES , CRACKS AND SKIRTING ANGLES REPAIR

MECHANICAL PREPARATION FOR CONCRETE SUBSTRATE :

- > HIGH POWER GRINDING MACHINE ACHIEVE SPS 4-6
- > HIGH PRESSURE SAND SHOOT BLASTING MACHINE
- > MANUAL GRINDERS FOR VERTICAL WALLS & SKIRTING





MECHANICAL PREPARATION FOR STEEL SUBSTRATE :

- > HIGH PRESSURE SAND SHOOT BLASTING MACHINE
- > MANUAL GRINDERS FOR VERTICAL WALLS & SKIRTING
- > ROTORY WIRED GRINDERING FOR CORRUGATED STEEL TO REMOVE

SHUNNY LAYER FOR ACHIEVING HIGH BONDING

CRACKS & JOINTS REPAIR:

- > USING PU SEALANT FOR FILLING DEEP WIDE CRACKS
- > USING PUTTY FOR FILLING HOLES & SKIRTING ANGLES
- > USING FILLERS FOR EXPANSION JOINTS & PU SEALANT FILLER



Work scope	CLIENT	O.I.S
PROJECT SITE PREVIEW & TECHNICAL REPORT	X	\checkmark
PROJECT DOCUMENTATION (QUOTATIONS , SCOPE OF WORK , CONTRACTS , DATA SHEET, FORMS)	X	\checkmark
PROJECT APPLICATION MATERIALS	X	
Project EQUIPMENT & TOOLS	X	
PROJECT TRAINED TECHNICIANS & LABORS	X	\checkmark
PROJECT APPROVALS & PAYMENTS ARRANGED	\checkmark	X
ELECTRICITY SOURCE 220 V , 3 PHASES IN WORK SITE		X
WATER SOURCE IN WORK SITE FOR CLEANING & TESTING PROCESS	\checkmark	X
PLUMBING WORKS & DRAINAGE WORKS	\checkmark	X
LECTRICTY WORKS , CABLE REFIXING OR REPLACING ,AIRCONDITIONGING WORKS	\checkmark	X
MATERIAL STORAGE IN WORK SITE	\checkmark	X
	\checkmark	

SCOPE IS CHANGEABLE ACCORDING TO THE AGREEMENT BETWEEN THE CLIENT & APPLICATOR



□ POLYUREA #SYS. PROJECTS CASE STUDY

AERATION TANKS REPAIR (REHABILITATION PROCESS) CASE STUDY

STAGE 3 # STEEL WORKS

SUBS. TYPE	FLAT STEEL ,OLD TANKS
APPLIED SYSTEM	POLYUREA#SYS.@2 LAYERS (PRIMER +POLYUREA) INCLUDE. SURFACE PREP.
PROJECT SIZE	865 SQM

STAGE 1 # CHECKING SUBSTARTE CONDITION TO INDICATE SUITABLE REPAIR MATERIAL



- ✓ HEAVY RUSTED LAYERS ALL OVER WALLS & FLOOR
- ✓ SUPPORT ANGELS COMPLETELY DAMAGE AND NEED TO BE REPLACED

- ✓ HOLES AND DAMAGE AREAS IN WALL NEED TO BE COVERED WITH LIGHT STEEL SHEETS
- ✓ NEED VENTALITION SOURCE USING AIR PUMP AND OPEN COVERS IN THE ROOF

STAGE 2 # STARTING SUBS. PREPARATION USING MANUAL ABBRADING WITH ROTORY WIRE GRINDER , SAND BLASTING IS NOT RECOMMENDED BECAUSE OF WEAK STEEL



- ✓ DEEP CLEANING FOR REMOVING RUSTED LAYERS
- ✓ THEN USING ROTORY WIRE GRINDERS TO REMOVE RUST
- ✓ MAKING SURE OF WEARING FULL SAFETY % FILTER MASKS
- ✓ MAKING SURE THAT VANTILATION IS WELL INSIDE TANKS



STAGE 5 # POLYUREA SPRAY & FINAL VIEW



- ✓ APPLY PU SEALANT FOR ANGLES
- ✓ APPLY STEEL PUTTY FOR
- DAMAGE AREAS ARROUND
- ✓ APPLY PUTTY FOR WALL ANGLES SKIRTING
- ✓ APPLYING PRIMER ABOVE
 WHOLE SYBSTRATE WITH
 THICKNESS 0.15 MM
 - ✓ APPLY POLYUREA SPRAY THICKNESS 3 MM
 - ✓ FULL LINNING INTERNAL SUBS.
 - ✓ CHECKING SPRAY
 ARROUND STEEL SUPPORT
 ANGLES & DAMAGE
 REPAIRED AREAS





WATCH FULL VIDEO HERE





WALLS

✓ CUT & REMOVE THE OLD SUPPORT ANGLES

✓ REPAIR DAMAGE AND HOLES AREAS IN WALLS

✓ INSTALL NEW ANGLES THICKNESS 5 MM ALL OVER THE



✓ POLYPOLYUREA APPLICATION SYSTEM THICKNESS

NEW SUBSTRATE CONCRETE OR STEEL		OLD SUBSTRATE REPAIR CONCRETE OR STEEL	
EPOXY PRIMER	0.15 MM	EPOXY PRIMER	0.15 MM
POLYUREA	2 MM	POLYUREA	3 MM
TOP COAT	0.10 MM	TOP COAT	0.10 MM

✓ POLYPOLYUREA APPLICATION SYSTEM WARRANTEE

SUBSTRATE CONDITION	POLYUREA THICKNESS	INSULATION LOCATION	WARRANTEE	REMARKS
NEW SUBSTRATE	2 MM	INDOOR	20 YEARS	COVERED @2 LAYERS SYS.
NEW SUBSTRATE	2 MM	OUTDOOR	20 YEARS	COVERED @2 LAYERS SYS.
NEW SUBSTRATE	2 MM	OUTDOOR	15 YEARS	UN COVERED @3 LAYERS SYS.
OLD SUBSTRATE TILE REPAIR	2 MM	OUTDOOR	15 YEARS	UNCOVERED @3 LAYERS
OLD SUBSTRATE TANKS LINNING	2 MM	INDOOR	12 YEARS	UNCOVERED @ 2 LAYERS SYS.
OLD SUBSTRATE TANKS LINNING	3 MM	INDOOR	20 YEARS	UNCOVERED @ 2 LAYERS SYS.





THANKYOU!



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SAUDI ARABIA